BRAIDING MACHINES

TEXTILE MACHINE WORKS

READING, PA.

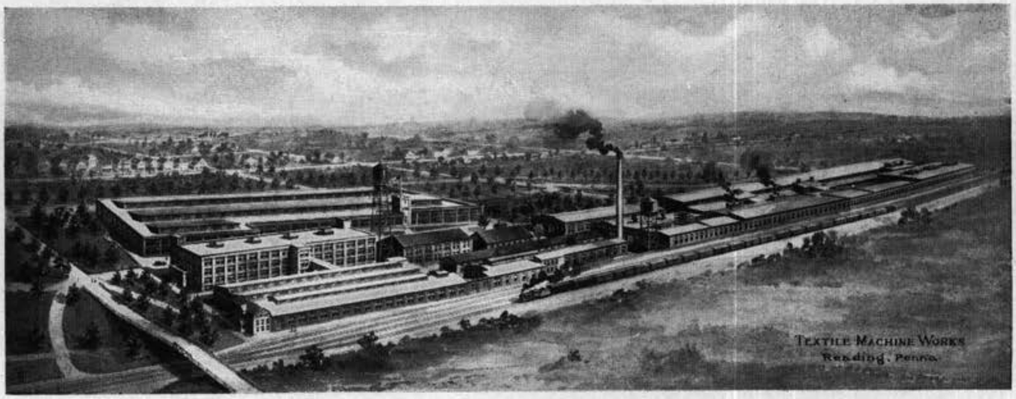
SOLE AGENTS:

J. B. HYDE & CO., LTD.,

~~BROADHEATH~~, Nr. MANCHESTER.

WYTHENSHAWE

BRAIDING MACHINES



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PREFACE

A NUMBER of years ago a series of articles entitled "Manufacture of Braid in the United States," compiled by our treasurer Mr. Ferdinand Thun, was published by the Textile World Record of Boston, Mass. These articles were later published in pamphlet form by the Textile Machine Works for general distribution. This pamphlet has now been out of print for several years, but numerous requests for copies of same are still being received. For this reason, we have decided to publish this booklet, which we hope will prove as popular as the former pamphlet.

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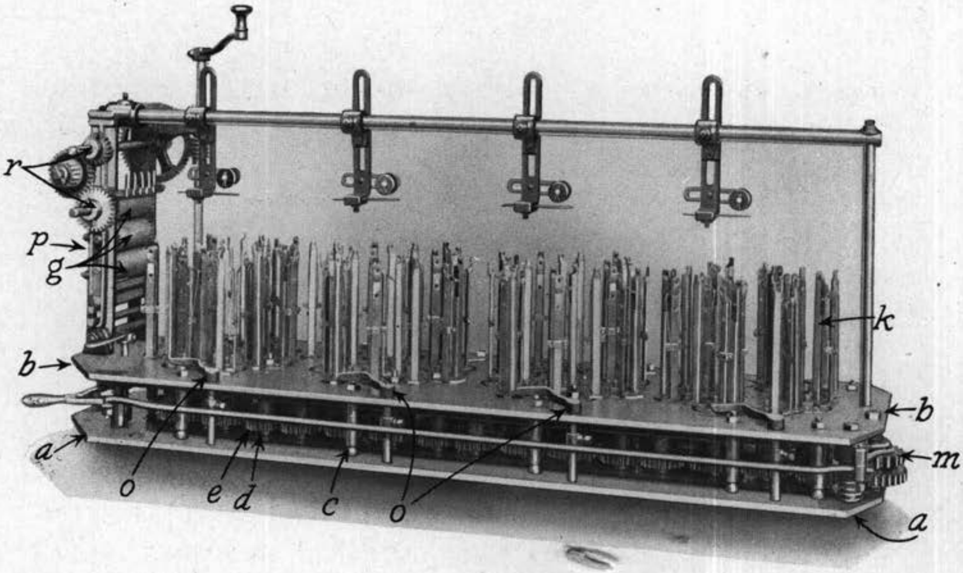
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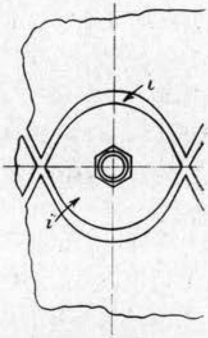
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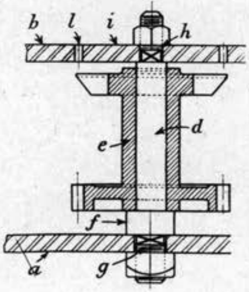
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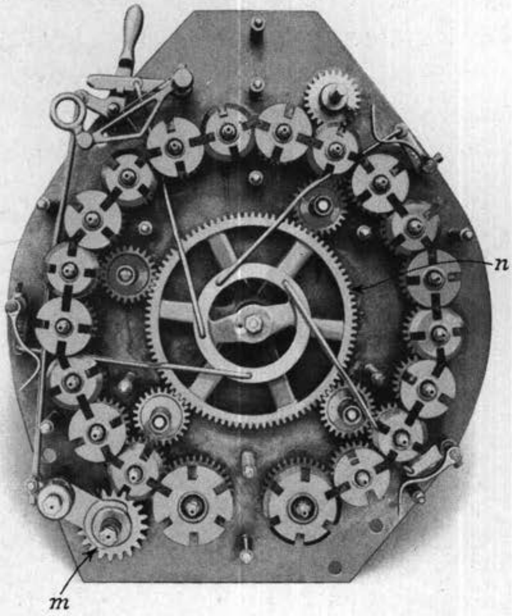
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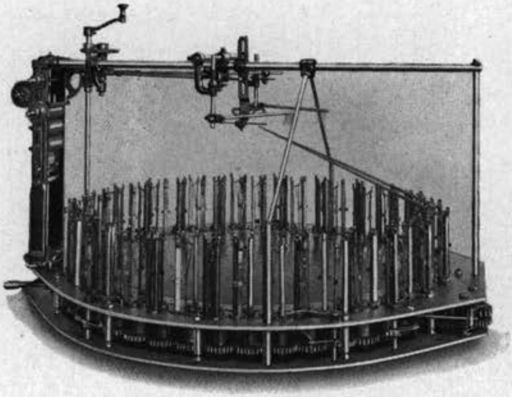
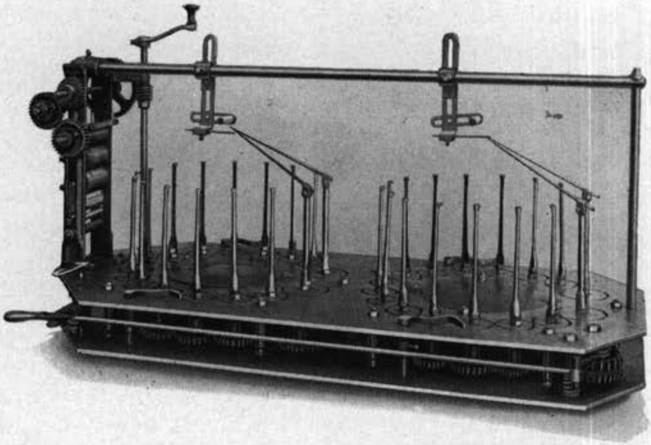
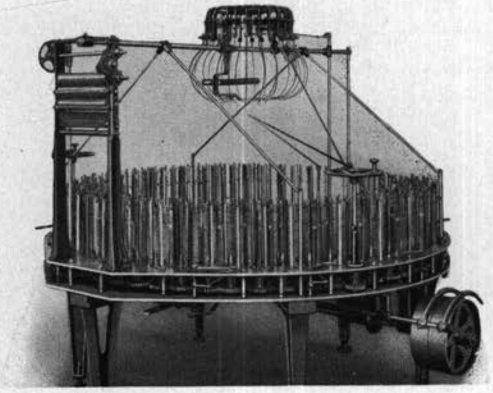
INTRODUCTION

In this booklet we are not going to attempt to go into the history of the art of braiding or braiding machines, neither are we going to describe the operation of braiders in detail, but rather are going to illustrate and give a brief description of the more popular types of braiding machines, which is what our customers and prospective customers are primarily interested in.

Before going further, we want to point out that braiding machines as we build them today are modern in both design and construction. The bottom (*a*) and top (*b*) plates of the machines are made from high-carbon steel. The stay bolts (*c*) and gear pins (*d*) are made from open-hearth steel. The horn gears (*e*) are made from high-grade cast iron, have cut teeth, milled slots or horns and have a long bearing. All other gears are made from high-grade cast iron and have cut teeth. The gear pins have a solid shoulder (*f*) which acts as a bottom bearing for the horn gear, and have squares milled on both ends. The bottom square (*g*) of the gear pin fits into a square hole in the bottom plate and the top square (*h*) fits into a square hole in the quoit (*i*). This provides an absolutely rigid construction which prevents the quoit from turning. The top plates (*b*) of the machines are finished to thickness by grinding and are all of uniform gauge. This makes it possible to use carriers (*k*) that have a standard-gauge foot which can be used interchangeably on all braiders. The run or raceway (*l*) of the top plate is finished by milling and grinding, and the width and contour of same have been scientifically designed so that the wear of the plate and carrier foot has been reduced to a minimum. The clutch (*m*) of the machine is of an improved type which is both simple in design and easy of operation. By changing the size of the clutch gear (*m*), the speed of the machine can be decreased or increased. The larger machines are built with centre gears (*n*) through which the drive to the horn gears is transmitted at several points to minimize the power consumption. The machines are equipped with an automatic stop (*o*). This stop automatically stops the machine when an end of the material breaks or runs out. The overhead of the machines is well designed and substantially con-







structed. A press-roller take-up (*p*) is commonly used and the speed at which the rollers (*g*) of this take-up run is controlled by means of change gears (*r*). This provides an arrangement whereby the relative speed of the horn gears and take-up rollers can be changed to vary the number of picks per inch produced.

The smaller types of braiders are usually built as multiple-head machines—that is, several machines are built together having a common drive and common take-up, while the larger braiders are built as individual machines. Bench or gear-driven machines are most commonly used because of the economy of floor space which can be obtained by the use of machines of this type, while very large and special braiders are usually built on long legs for individual belt drive.

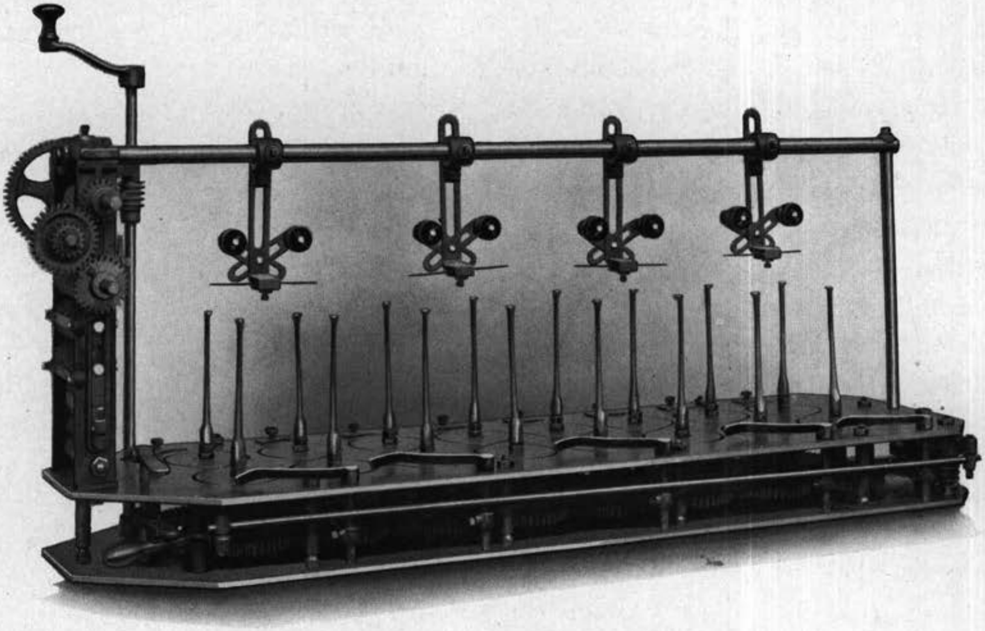


Fig. 3. 8 Head, 7 Carrier, Soutache Braider

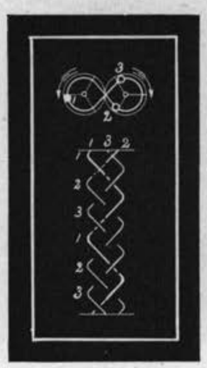


Fig. 1. 3 Carrier Soutache Braider

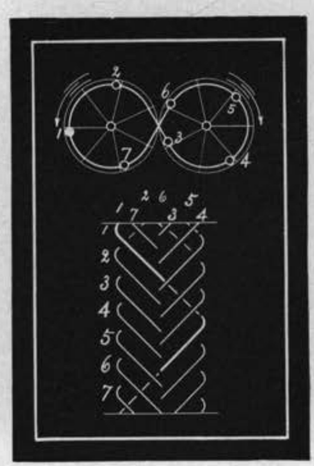


Fig. 2. 7 Carrier Soutache Braider

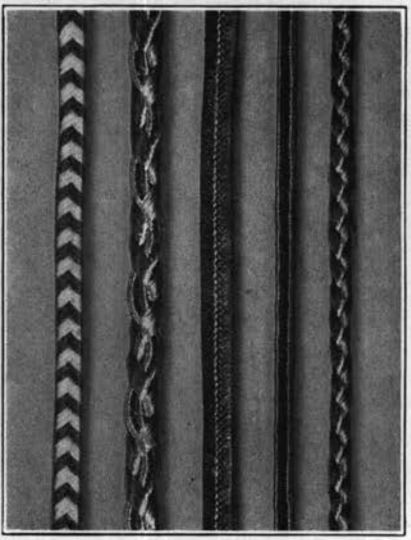


Fig. 4. Braids made on Soutache Braiders

SOUTACHE BRAIDERS

The simplest form of braider is what is known as the soutache machine. This type of braider is built with two horn gears and has what is commonly called a "figure 8" run or raceway. Soutache braiders have an uneven number of carriers, starting with 3, and the most popular sizes of machines of this type are the 7, 9, 11 and 13 carrier machines. Other carrier combinations are used for special machines for making soutache braids used for special purposes.

Fig. 1 is a drawing of a 3 carrier soutache braider and the braid that would be produced by a machine of this size. Fig. 2 is a drawing of a 7 carrier soutache braider and the braid that would be produced by a machine of this size. These two drawings, we believe, will make the design of soutache braiders and the construction of the braid produced by same perfectly clear. Fig. 3 illustrates an 8 head, 7 carrier, soutache braider, while Fig. 4 illustrates a few samples of trimming braids which have been made on ordinary soutache braiders. These samples show a few of the many kinds of soutache braids that can be made by using different materials and color combinations.

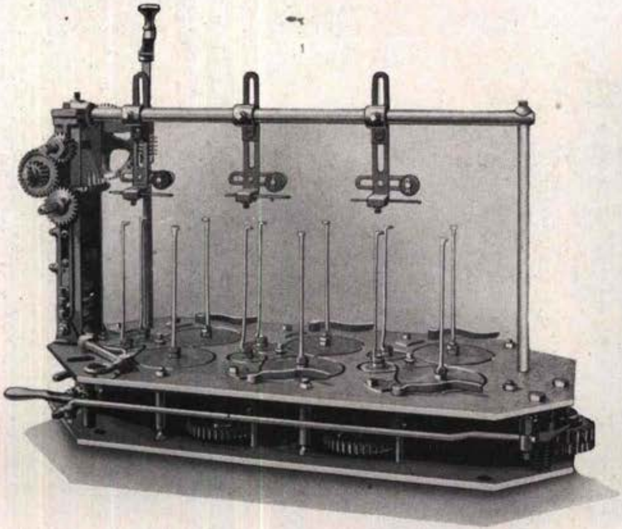


Fig. 5. Oriental Soutache Braider

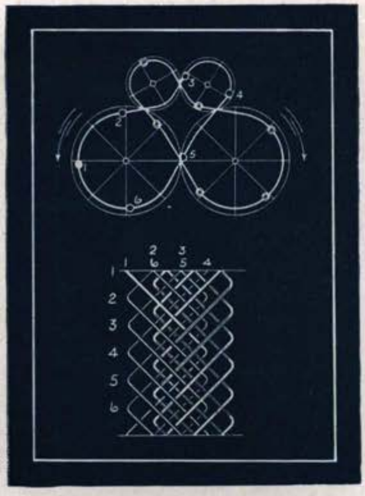


Fig. 6. 6 Carrier Oriental Soutache Braider

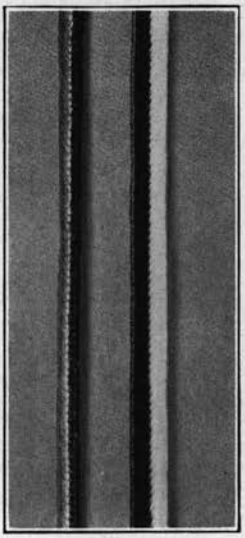


Fig. 7. Braids made on Fig. 5 Machine

In addition to the so-called plain soutache braiders referred to above, a number of variations of this type of machine are also built.

Fig. 5 illustrates what is known as an Oriental soutache braider. This machine produces a two-color effect but does not make a regular soutache braid because the design of the machine is such that the product of same has a rib on the lower side where the two colors join together. Fig. 6 is a drawing of a 6 carrier Oriental soutache braider and the braid produced by this machine. Fig. 7 illustrates the product of this machine and, by referring to this illustration, it will be seen that the samples of braid shown are very similar in appearance to an ordinary soutache braid except that same are of a two-color effect.

Fig. 8 illustrates what is known as a double soutache braider. This machine produces a braid the construction of which is in effect two soutache braids joined together. Fig. 9 illustrates

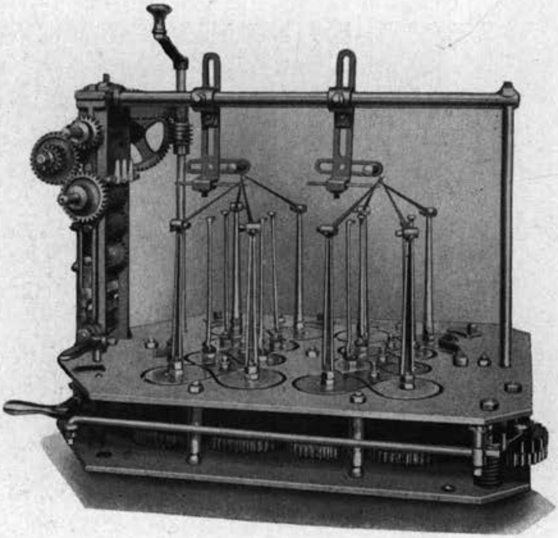


Fig. 8. Double Soutache Braider

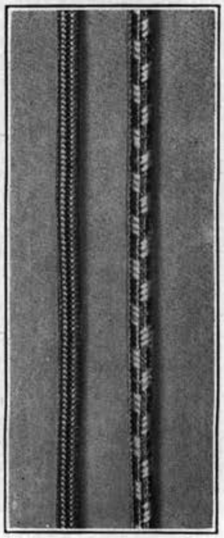


Fig. 9. Braids made on Fig. 8 Machine

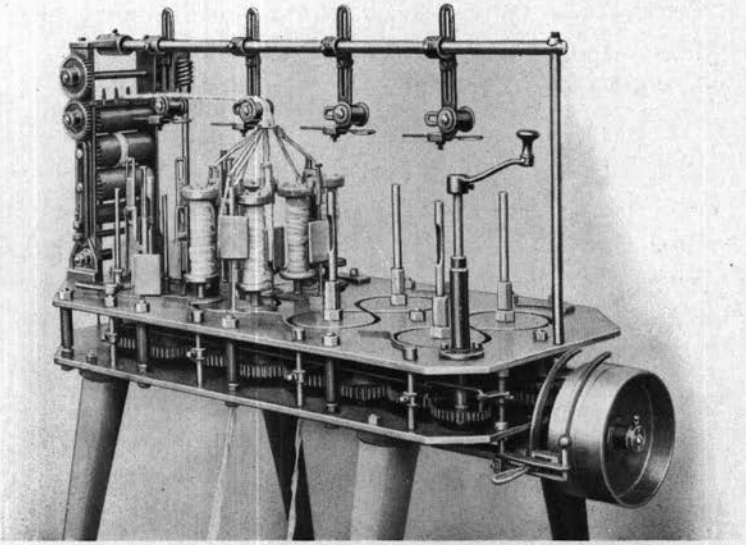


Fig. 10. Special 5 Carrier Soutache Braider

the product of this machine. It will be noted that the two soutache braids can each be of a different color, but the two ribs of each braid must be the same color.

Fig. 10 illustrates a special 5 carrier soutache braider of heavy construction which is used principally for making soutache braid such as is used for making so-called "Rag" or "Colonial" rugs. Fig. 11 illustrates the product of this machine.

Fig. 12 illustrates another special type of soutache braider of very heavy construction which is used for making what is commonly known as "paper cord" or "fibre" braid. The design of this machine differs from the ordinary soutache braider in that each end of the several different strands of paper cord or fibre being braided is kept separate by being carried on individual carriers. These individual carriers are fitted on a shuttle which carries the group of car-

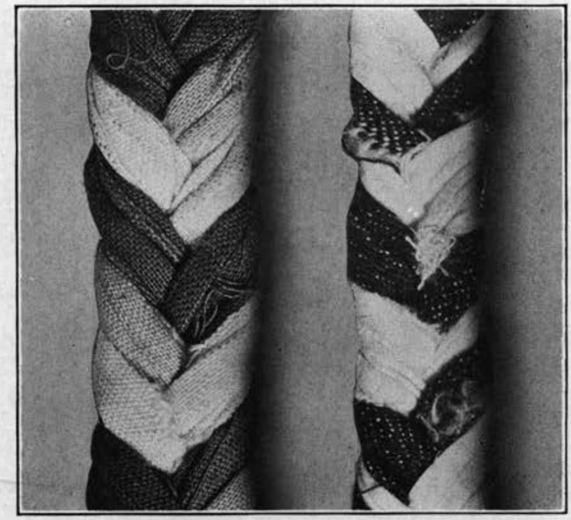


Fig. 11. Braids made on Fig. 10 Machine

riers. These shuttles in going around the run or raceway of the braider are prevented from turning by an eccentric arrangement which is part of the horn gear. This arrangement of carriers and movement of shuttles produce a braid in which the individual ends of paper or fibre cord are parallel and which is commonly known as a "plaited soutache" braid. This type of braider is built with 3 and 5 shuttles of 4 carriers each. Fig. 13 illustrates the product of these machines, which is used principally for trimming reed or fibre furniture, baby carriages, etc.

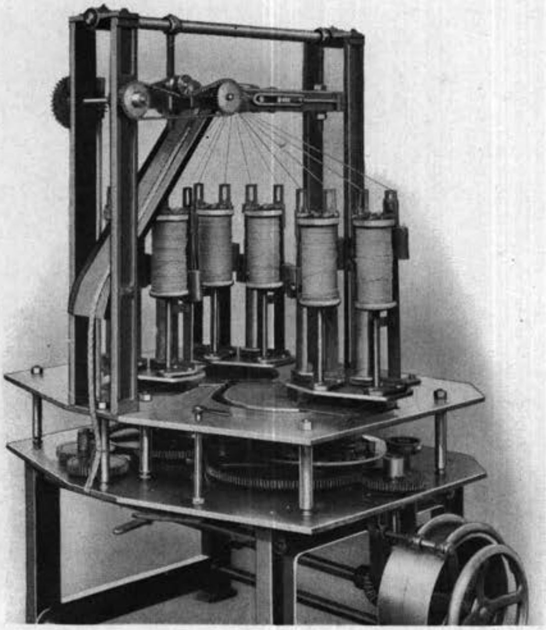


Fig. 12. Special Soutache Braider

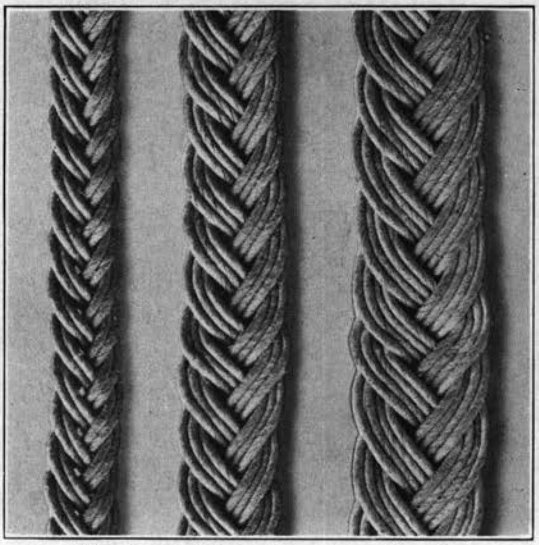


Fig. 13. Braids made on Fig. 12 Machine

In addition to the various types of soutache braiders illustrated and referred to above, other special types of these machines are built, but the demand for these very special machines is so small that we are not warranted in illustrating or referring to the same in this booklet.

FLAT BRAIDERS

Flat braiders are used for making what are commonly known as "Flat" braids. These machines can be divided into three classes—the so-called "plain-flat" machines, which braid over two under two; the "diamond-flat" machines, which braid over one under one; and the "hercules-flat" machines, which braid over three under three.

Fig. 14 is a drawing of a 25 carrier, 6 line, "plain-flat" braider and the braid that would be produced by a machine of this size.

Fig. 15 is a drawing of a 26 carrier, 6 line, "diamond–flat" braider and the braid that would be produced by same.

Fig. 16 is a drawing of a 37 carrier, 6 line, "hercules-flat" braider and the braid that would be produced by same.

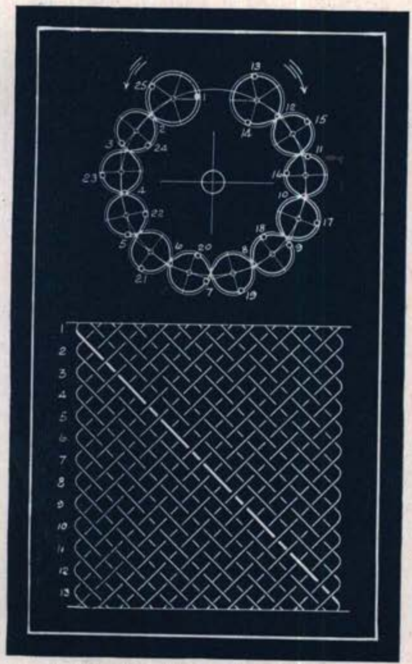


Fig. 14. 25 Carrier, 6 line, "Plain-flat" Braider

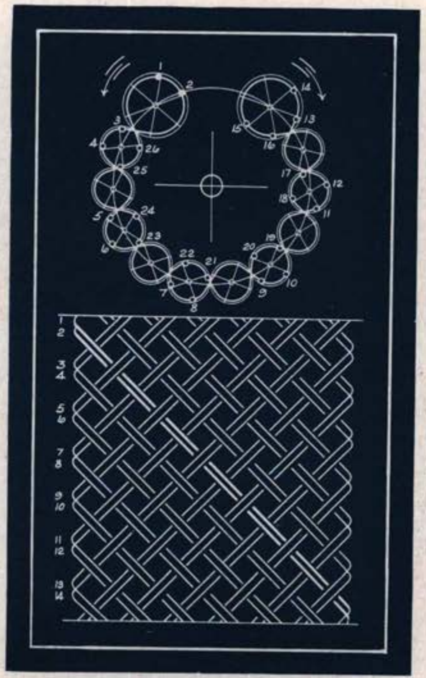


Fig. 15. 26 Carrier, 6 line, "Diamond-flat" Braider

In making fancy patterns of braid on "plain-flat" braiders, it sometimes becomes necessary, on account of color combinations of the material being braided, to divide the carriers evenly. If the machine is set for making "plain-flat" braid in the usual manner—that is, a 6 line machine with 25 carriers—the carriers cannot be divided evenly. It therefore becomes necessary to set the machine for 24 carriers, which can be divided evenly. This is what is commonly known as "3 horn plain-flat" braid, and is accomplished as illustrated by Fig. 17 which is a drawing of a 24 carrier, 6 line, "3 horn plain-flat" braider and the braid that would be produced by same.

By again referring to Fig. 14, it will be noted that the 25 carrier, 6 line, "plain-flat" braider illustrated thereby is built with 4 horn gears and has 5 horn terminal gears. The carriers are set up one horn full and one horn empty. This produces a braid which is braided over two under two.

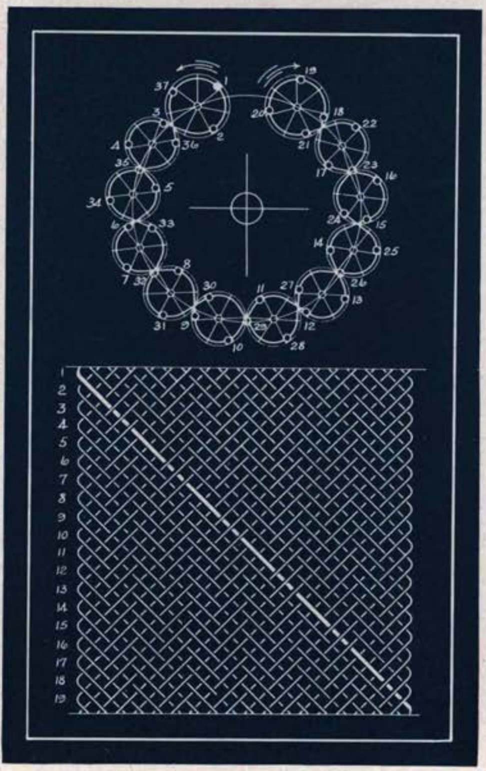


Fig. 16. 37 Carrier, 6 line "Hercules-flat" Braider

By again referring to Fig. 15, it will be noted that the 26 carrier, 6 line, "diamond-flat" braider illustrated thereby is built with 4 horn gears and has 6 horn terminal gears. The carriers are set up two horns full and two horns empty. This produces a braid which is braided over one under one.

By again referring to Fig. 17, it will be noted that the 24 carrier, 6 line, "3 horn plain-flat" braider illustrated thereby is built with 4 horn gears and has one 3 horn and one 5 horn terminal gear. The carriers are set up one horn full and one horn empty. This produces a braid which is braided over two under two.

From the above description, it would appear that three different types of braiders would be required to make the three different "flat" braids described. This, however, is not necessary as provision can be made for changing the terminal gears of the machines. Several ways of doing this have been devised. The simplest way is to build the machines with what are known as "Universal Terminal Change Gears," which have been patented by the Textile Machine Works. Ordinarily 5 and 6 horn terminal gears would be of different diameters. Universal Terminal 5 and 6 horn gears, however, are of the same diameter and the only difference is in the number of horns and number of teeth. It therefore becomes possible to use the 5 and 6 horn terminal gears interchangeably. Fig. 18 illustrates the construction of these Universal Terminal Change Gears and shows clearly how simple it is to make the change from 5 to 6 horn terminal gears or vice versa.

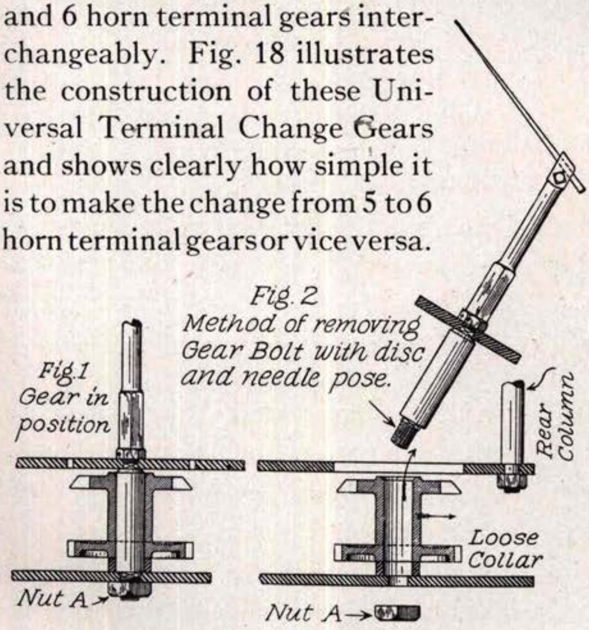


Fig. 18. Universal Terminal Change Gears

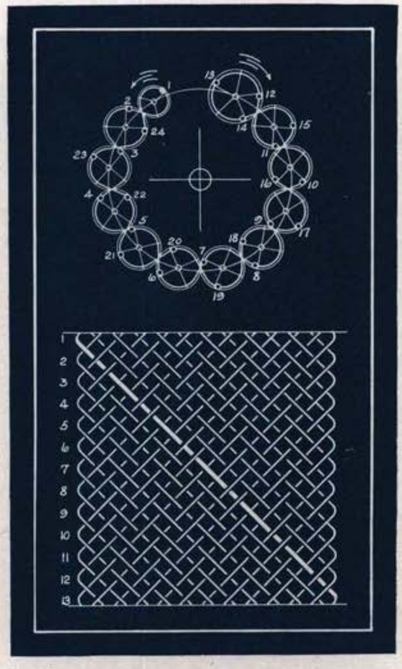


Fig. 17. 24 Carrier, 6 line, "3 horn Plain-flat" Braider

The 3 horn terminal change can also be made by using one of the 5 horn Universal Terminal Change Gears with a 3 horn Universal Terminal Change Gear. When it becomes necessary to do this, the 4 horn gear next to the terminal gear which is to be changed to 3 horn has to be replaced by a special compound 4 horn gear, which is also part of the Universal Terminal Change Gears. When this 4 horn special compound gear is

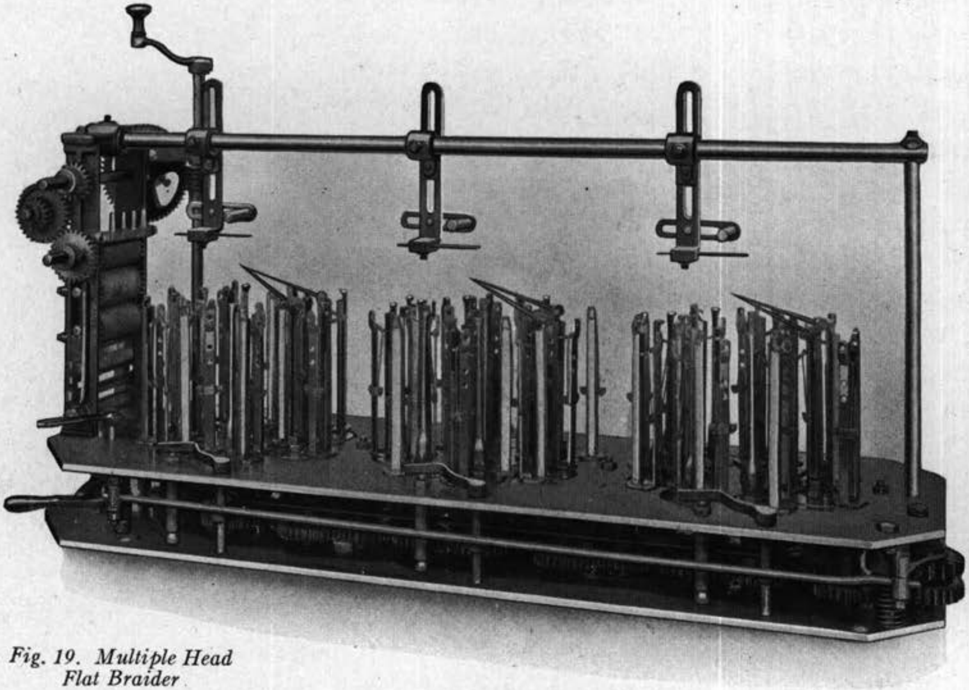


Fig. 19. Multiple Head Flat Braider

once in a braider, it is not necessary to remove same as it will operate with either a 3, 5 or 6 horn Universal Terminal Change Gear.

Hercules braiders, as illustrated by Fig. 16, are not built with Universal Terminal Change Gears because there is no necessity for doing this on account of the fact that these machines are seldom used for making fancy braids. When it is desired to make fancy braids on hercules braiders and it becomes necessary to change the terminals to either 5 or 3 horn, this is accomplished by cutting pieces out of the plates and fitting other pieces in so that the terminal quoits can be made the size required for the 3 or 5 horn terminal gears. This is done so seldom that we will not describe same in detail in this booklet.

Flat braiders from 25 carriers up are built with Universal Terminal Change Gears. The smaller machines, however, are built with regular terminal gears because it is not practical to build machines with more than two heads with Universal Terminal Change Gears on account of the fact that the connecting gears which transmit the power from one head to the other would interfere with the Universal Terminal Change Gears. Very few fancy patterns of braids requiring 6 horn terminal gears are made on the smaller machines. When such a machine is required, it is built specially with regular 6 horn terminal gears. This also applies to the smaller machines with a 3 horn terminal on one side and a 5 horn terminal on the other side.

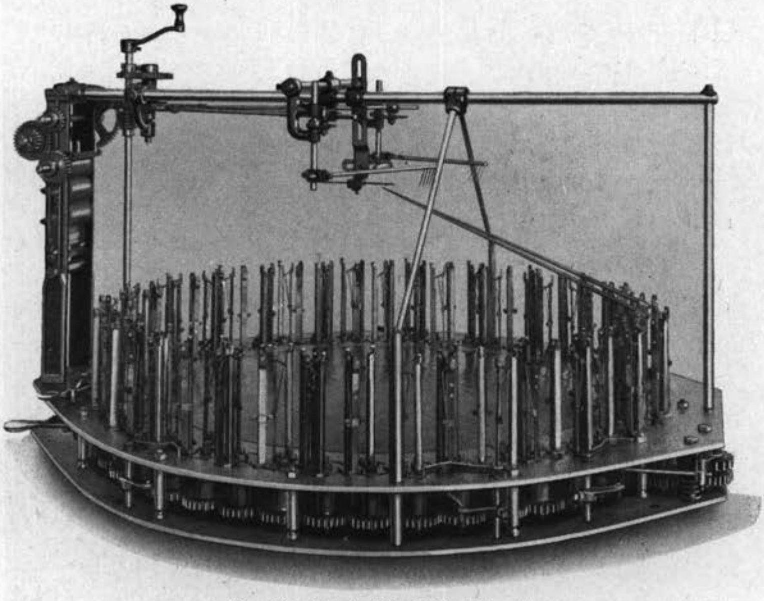


Fig. 20. Single Head Flat Braider

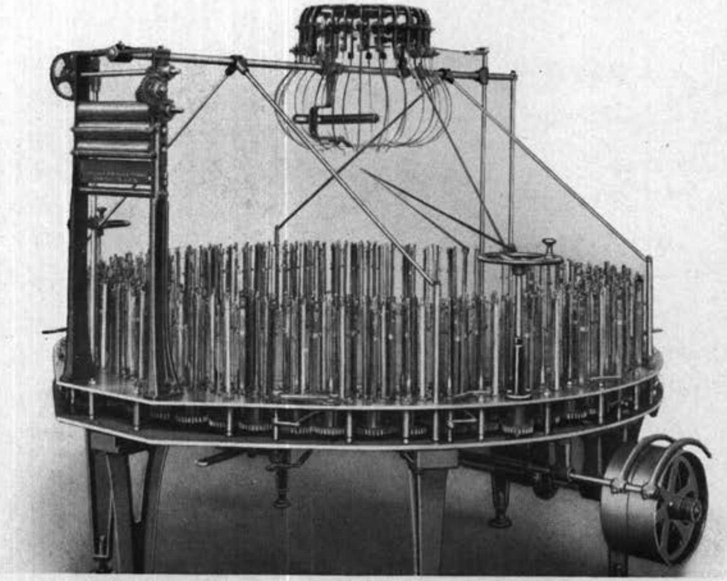


Fig. 21. Flat Braider on Long Legs with Crown Beater

The smaller flat braiders are built multiple head, as illustrated by Fig. 19, while the larger machines of this type are built single head, as illustrated by Fig. 20. Very large flat braiders are usually built on long legs for individual belt drive, as illustrated by Fig. 21.

The smaller flat braiders do not have beaters, as these are not required, but machines from 41 carriers up have plain beaters, as illustrated by Fig. 20. On large machines, crown beaters are very often required. Fig. 21 illustrates a large flat braider with crown beaters.

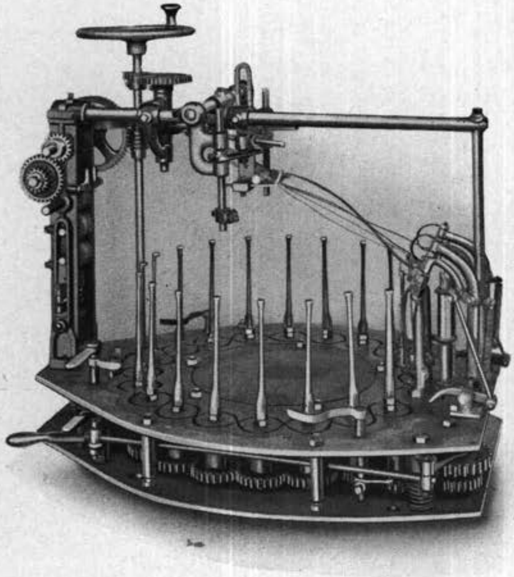


Fig. 22. Flat Braider with Loop Attachments

Practically all patterns of fancy braids produced on flat braiders are made by using different kinds of materials, different colors of materials, uneven tension weights and odd setting of carriers. Special attachments are also sometimes required. The most common of these special attachments are what are known as loop attachments for making loop edges. Fig. 22 illustrates a plain loop attachment. Another commonly used attachment is the auxiliary take-up required for making elastic

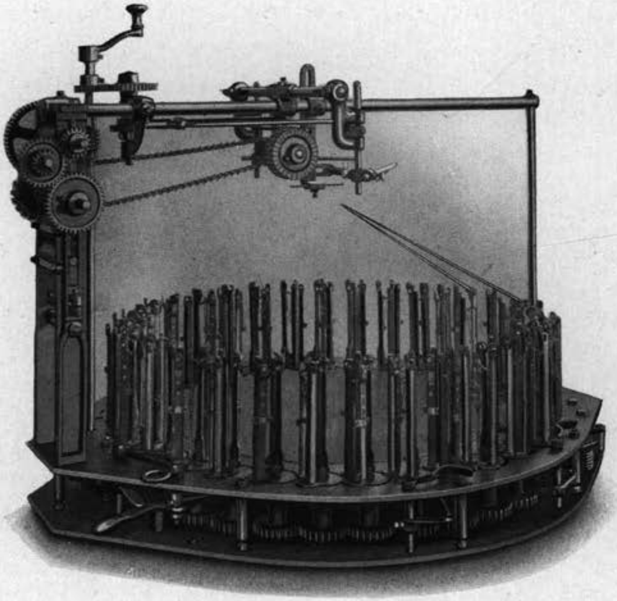


Fig. 23. Flat Braider with Auxiliary Take-up

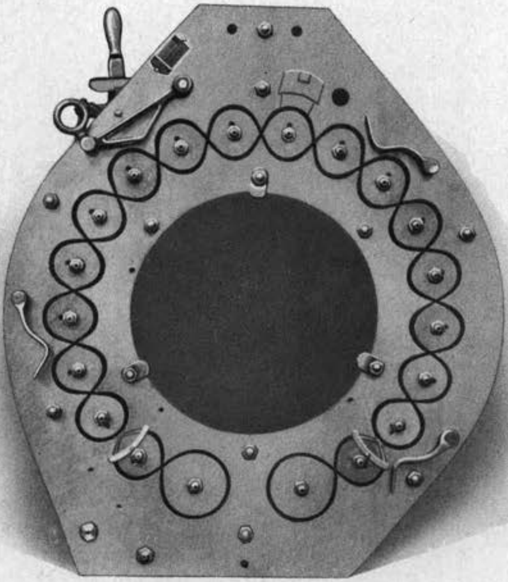


Fig. 24. Flat Braider with Patented Cut-off

braids which is illustrated by Fig. 23.

It is possible to cut flat braiders down to a lower number of carriers—for instance, a 41 carrier, 10 line machine can be cut down to a 33 carrier, 8 line braider, by cutting off 8 carriers, or 2 lines, on one side, or 4 carriers, or 1 line, on each side. While this is practical, it is not desirable on account of the additional cost. This can be done in two ways, one of which is to cut sections out of the deck of the machine in place of which regular cut-off sections are fitted, and the other is by means of a special cut-off, patented by the Textile Machine Works. This patented cut-off is illustrated by Figs. 24 and 25. Both of these cut-offs are so seldom used that we will not describe same in detail.

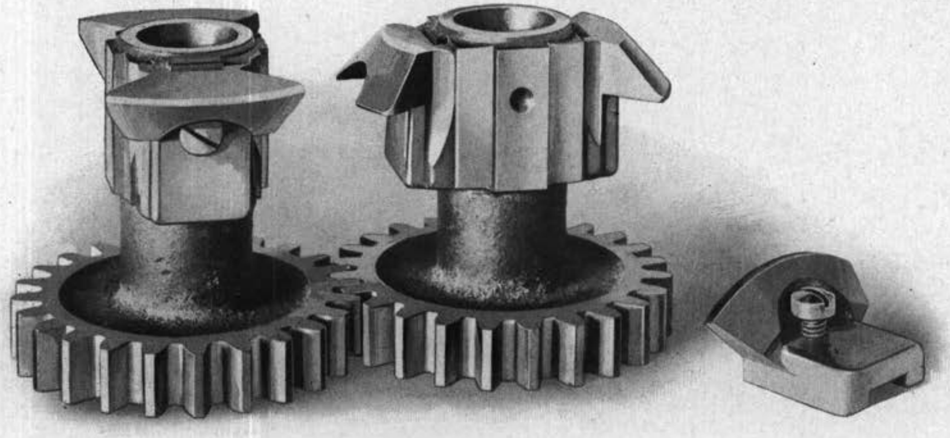


Fig. 25. Detachable-horn Gears forPatented Cut-off

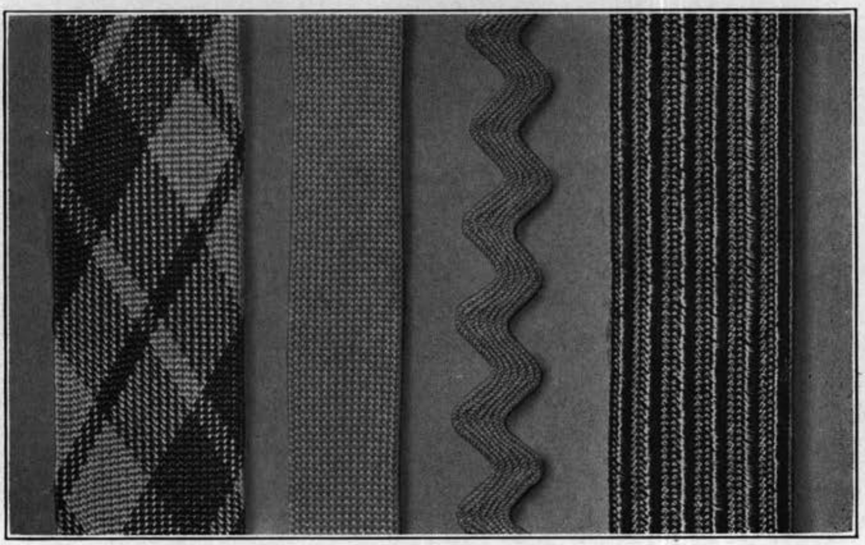


Fig. 26. Braids made on Flat Braiders

Figs. 26 and 27 illustrate some of the plain and fancy patterns of braids that it is possible to produce on flat braiders.

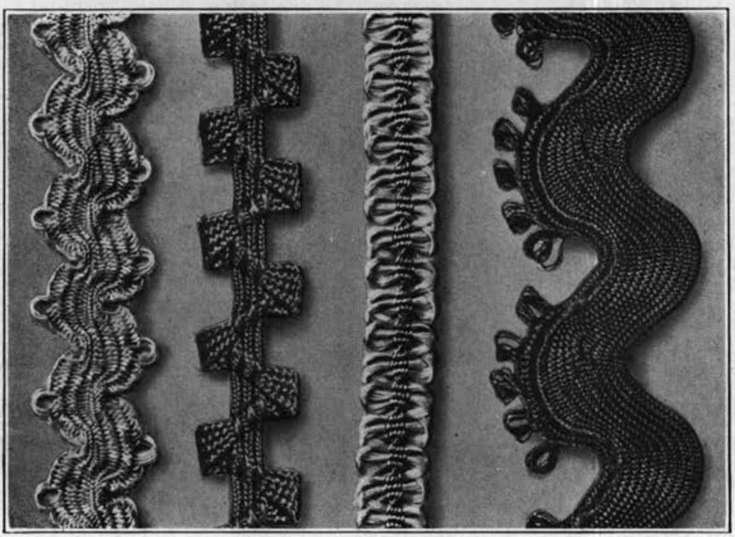


Fig. 27. Braids made on Flat Braiders

TUBULAR BRAIDERS

The principal difference between tubular and flat braiders is that the tubular machines do not have terminal gears, the gear circle being made up of gears all having the same number of horns or slots. The carriers on tubular braiders are divided into two sets, one of which runs right and the other left, and both sets of carriers run around the entire circumference of the run instead of turning on terminal gears as carriers of a flat braider do.

The product of tubular braiders is mostly used for staple braids such as shoe and corset laces, etc., but some fancy braids are also made on this type of machine. When these machines are used for making fancy patterns of braids, these patterns are produced in a similar manner to the way same are produced on flat braiders.

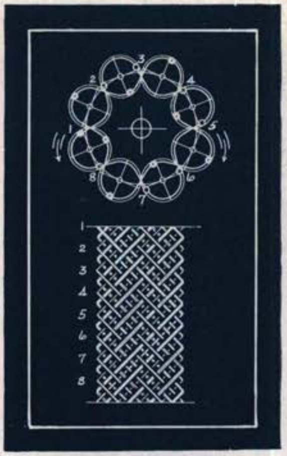


Fig. 28. Tubular Braider Set up for Plain Braid

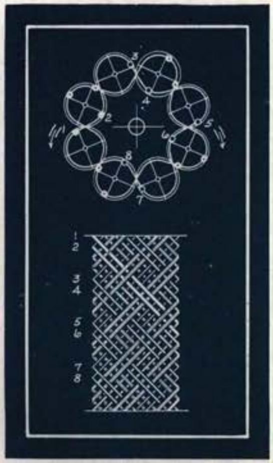


Fig. 29. Tubular Braider Set up for Diamond Braid

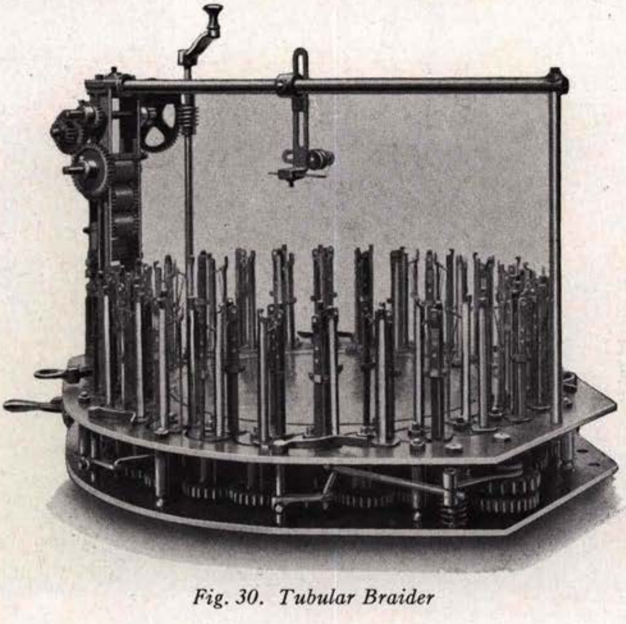


Fig. 30. Tubular Braider

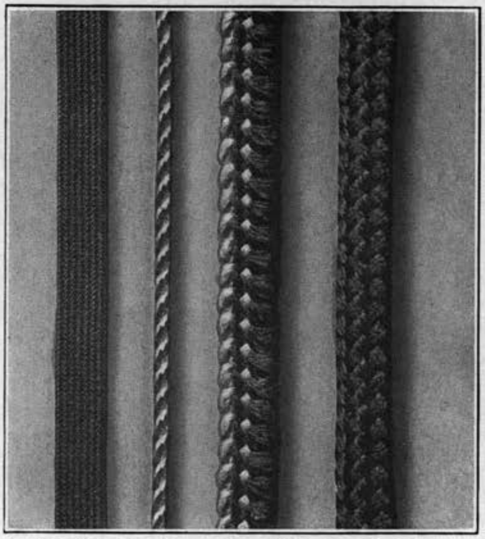


Fig. 31. Braids made on Tubular Braiders

Fig. 28 is a drawing showing how a tubular braider is set up for making plain braid, and Fig. 29 is a drawing showing how a tubular braider is set up for making diamond braid.

Fig. 30 illustrates a tubular braider, and Fig. 31 illustrates a few samples of braids made on tubular braiders.

Fig. 32 illustrates a double tubular braider. This machine produces two tubular braids joined together by a connecting braid and a number of fancy patterns of braid can be made

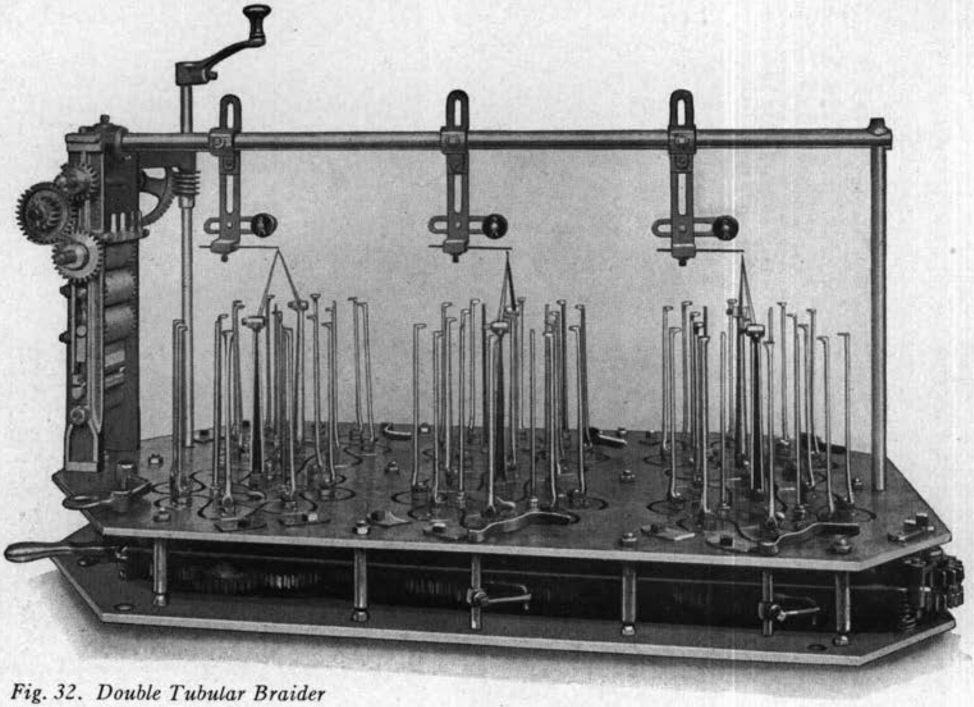


Fig. 32. Double Tubular Braider

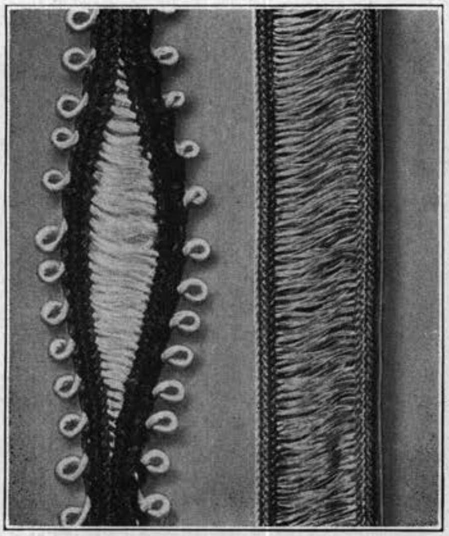


Fig. 33. Braids made on Double Tubular Braiders

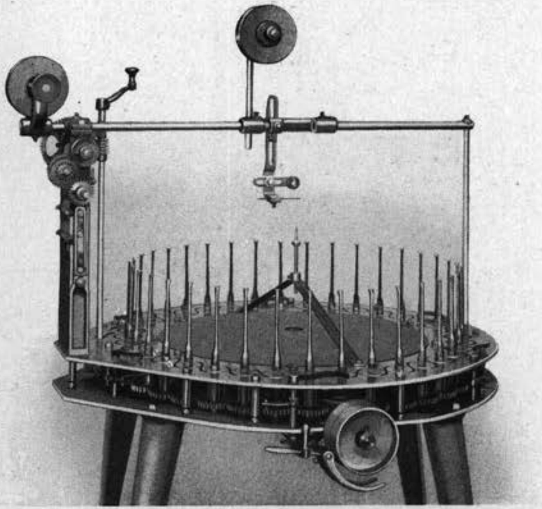


Fig. 34. Tubular Braider with Mould Braiding Attachment

on same. Fig. 33 illustrates some of the products of this machine.

Tubular braiders are also used for covering moulds. When they are used for this purpose, they are known as "mould" braiders. Fig. 34 illustrates a tubular braider with mould braiding attachment and Fig. 35 illustrates the product of this machine.

In addition to the machines illustrated and described above, tubular braiders are also built for making elastic braids, fish lines, shoe thread and other similar braids.

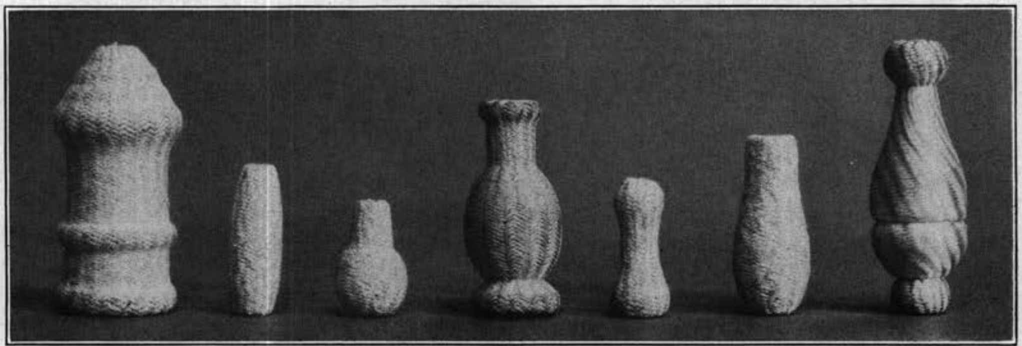


Fig. 35. Samples made on Mould Braiders

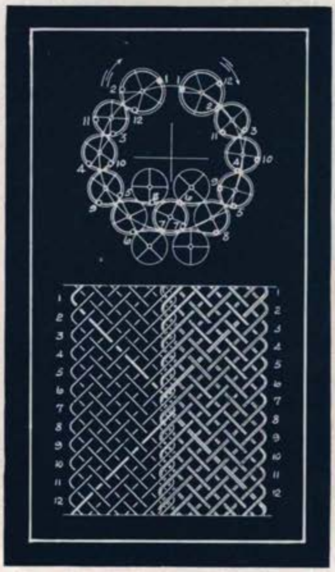


Fig. 36. 12 x 12 Carrier Stripe Braider

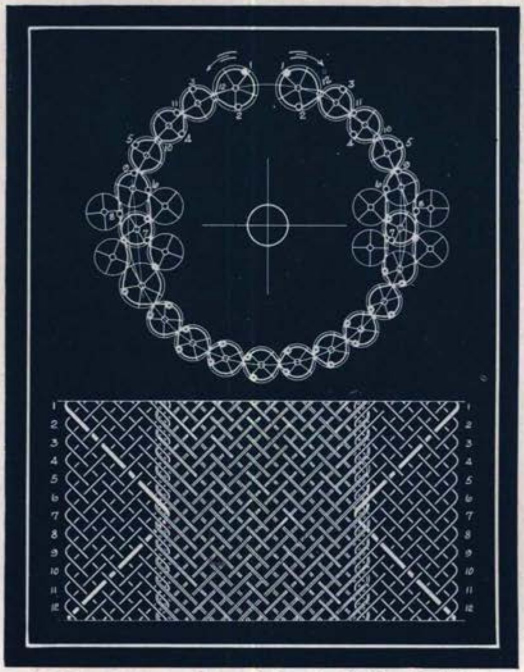


Fig. 37. 12 x 24 x 12 Carrier Stripe Braider

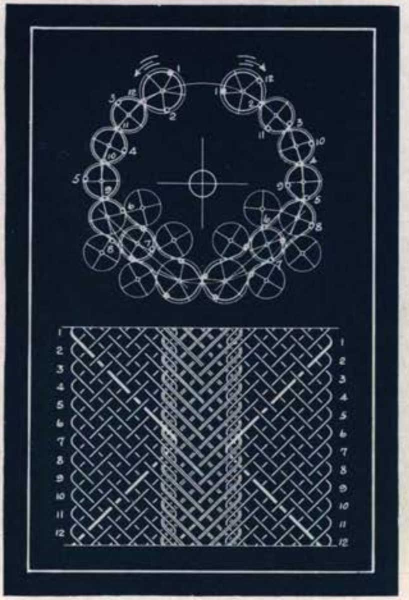


Fig. 38. 12 x 9 x 12 Carrier Stripe Braider

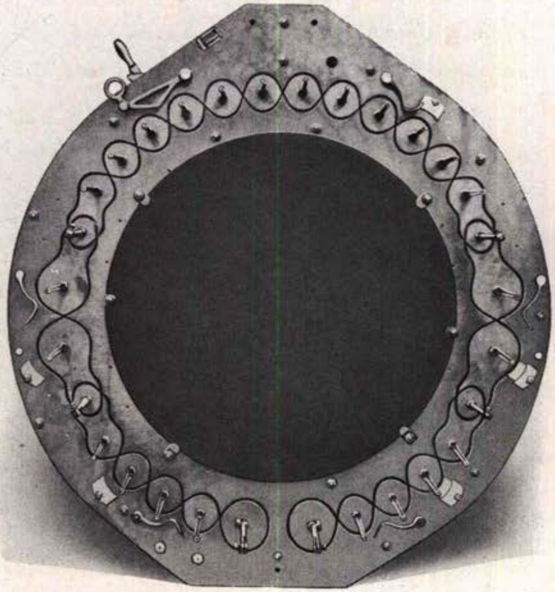


Fig. 39. Top plate of 12 x 9 x 27 x 9 x 12 Carrier Stripe Braider

STRIPE BRAIDERS

The design of stripe braiders is such that the braid produced by this type of machine consists of two or more braids joined together longitudinally to form a vertical stripe effect.

Fig. 36 is a drawing of a 12 x 12 carrier stripe braider and the braid that would be produced by a machine of this type. From this drawing, it will be seen that the machine illustrated will make a braid of two stripes, each stripe consisting of a 3 line plain braid.

Fig. 37 is a drawing of a 12 x 24 x 12 carrier stripe braider and the braid that would be produced by a machine of this type. This machine produces a braid having three stripes. The centre stripe of the braid produced by this machine is a 6 line plain braid while the two outside stripes are 3 line plain braid.

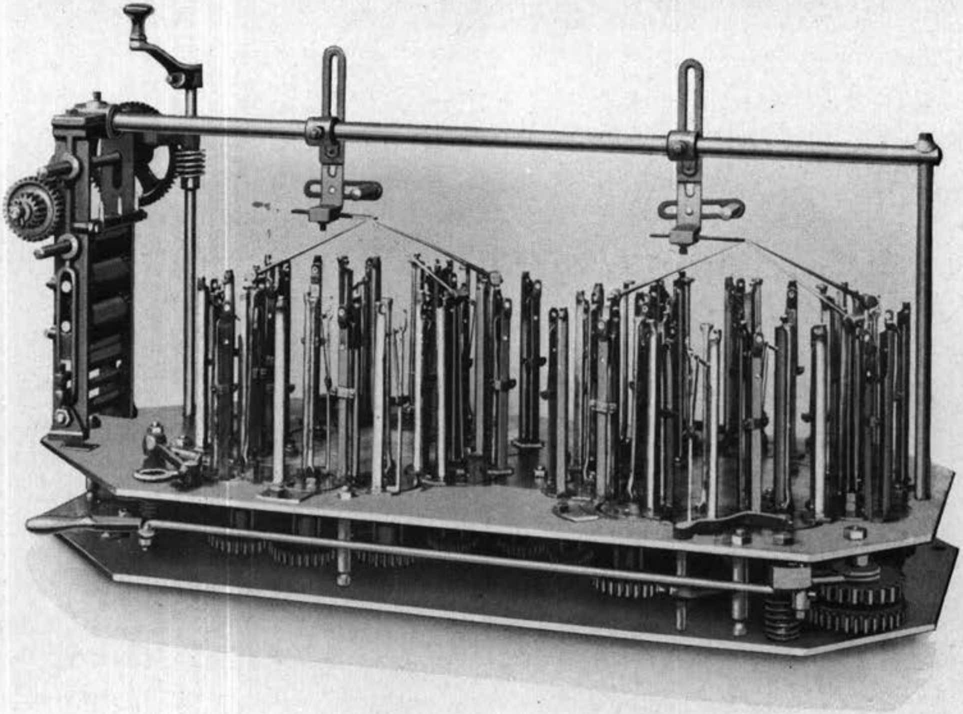


Fig. 40. 12 x 12 Carrier Braider

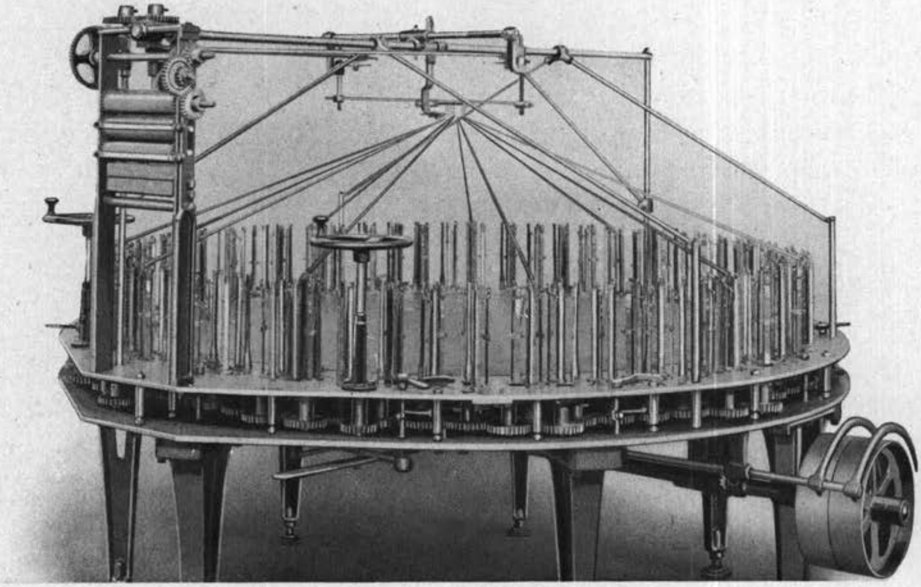


Fig. 41. 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 or 11 Stripe Braider

Fig. 38 is a drawing of a 12 x 9 x 12 carrier stripe braider and the braid that would be produced by a machine of this type. The centre stripe of the braid produced by this machine is a 9 carrier soutache braid while the two outside stripes are 3 line plain braid.

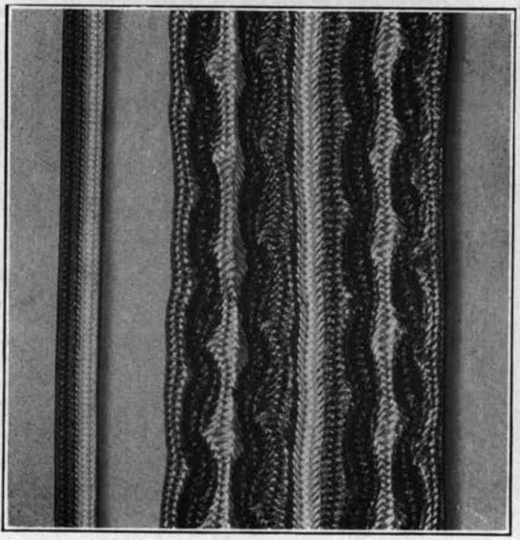


Fig. 42. Braids made on Fig. 40 and Fig. 41 Machines

From the above it will be seen that the different stripes of a stripe braid do not necessarily all have to be plain flat braids. These stripes can be soutache or president braids as well.

The most commonly used connection for the different sections of stripe braiders are what are commonly known as "horse-shoe" connections. Fig. 39, which is the

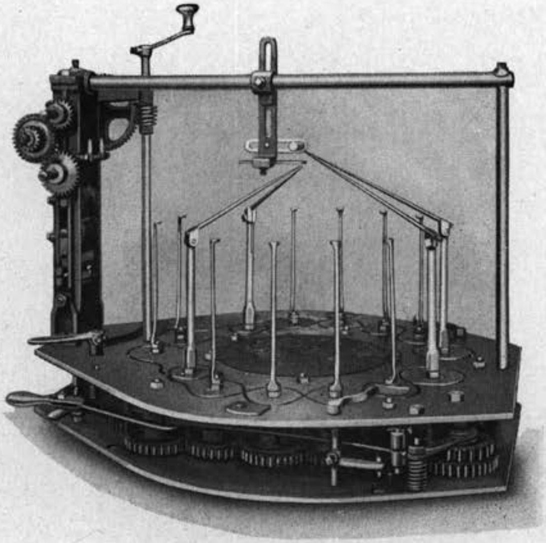


Fig. 43. 12 x 9 x 12 Braider

top plate of a 12 x 9 x 27 x 9 x 12 carrier stripe braider illustrates these so-called "horse-shoe" connections very clearly. Stripe braiders can also be built with "square" and other connections, but these are so seldom used that we will not illustrate or describe same in this booklet.

Fig. 40 illustrates a 12 x 12 carrier, or two stripe braider, while Fig. 41 illustrates a 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12 x 12, or eleven stripe braider. Fig. 42 illustrates the product of these two machines. From these illustrations, some idea can be obtained of the wide range of number of stripes for which stripe braiders are built.

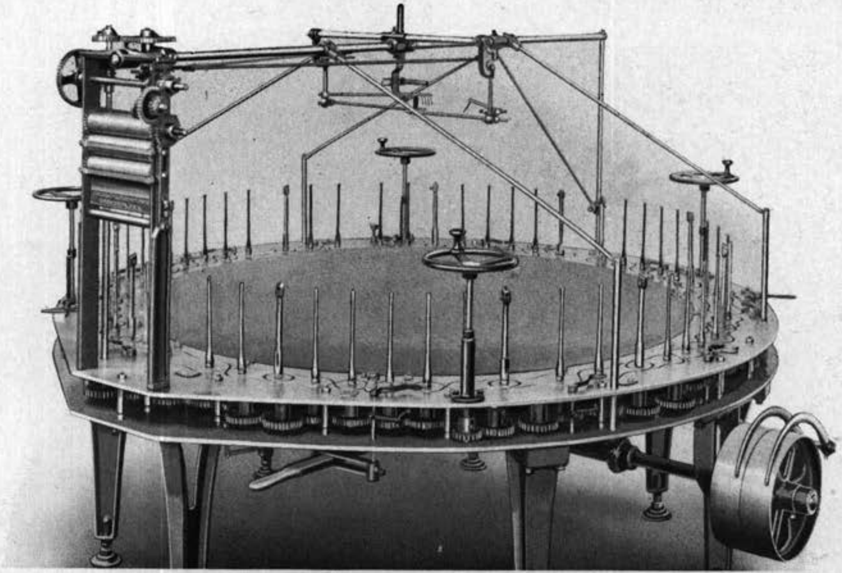


Fig. 44. 12 x 12 x 13 x 9 x 12 x 12 x 13 x 9 x 12 x 12 x 12 Carrier or 11 Stripe Braider

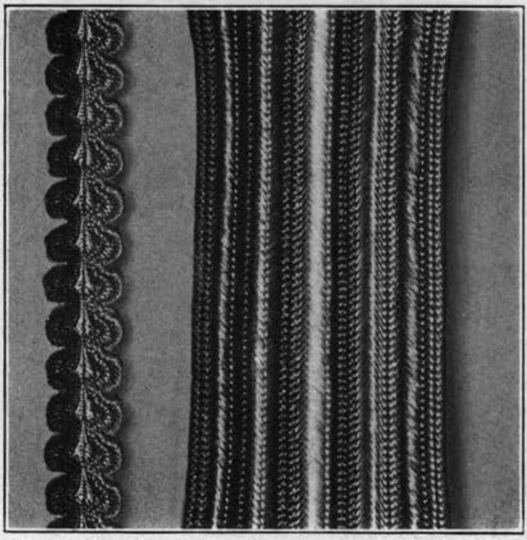


Fig. 45. Braids made on Fig. 43 and Fig. 44 Machines

Fig. 43 illustrates a 12 x 9 x 12 carrier, or 3 stripe braider the stripes of which are 3 line plain, 9 carrier soutache and 3 line plain. Fig. 44 illustrates a 12 x 12 x 13 x 9 x 12 x 12 x 13 x 9 x 12 x 12 x 12 carrier, or eleven stripe braider, the stripes of which are 3 line plain, 12 carrier president, 3 line plain, 9 carrier soutache, 3 line plain, 12 carrier president, 3 line plain, 9 carrier soutache, 3 line plain, 12 carrier president and 3 line plain. Fig. 45 illustrates the product of these two machines. These illustrations give some idea of the range of carrier combinations in which stripe braiders are built.

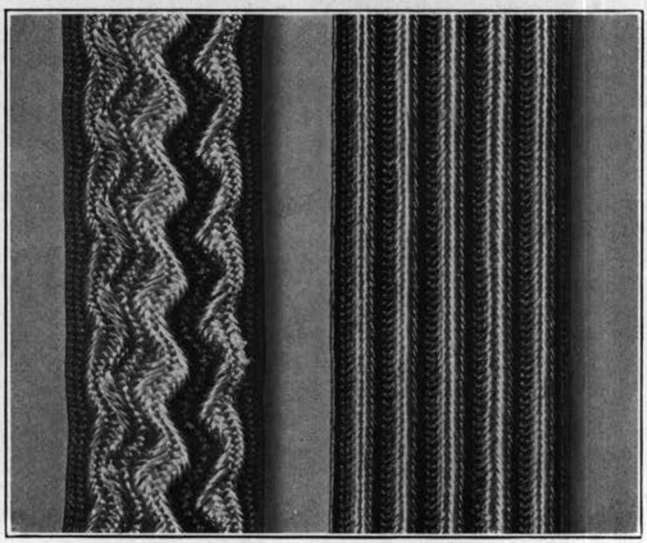


Fig. 46. Braids made on Stripe Braiders

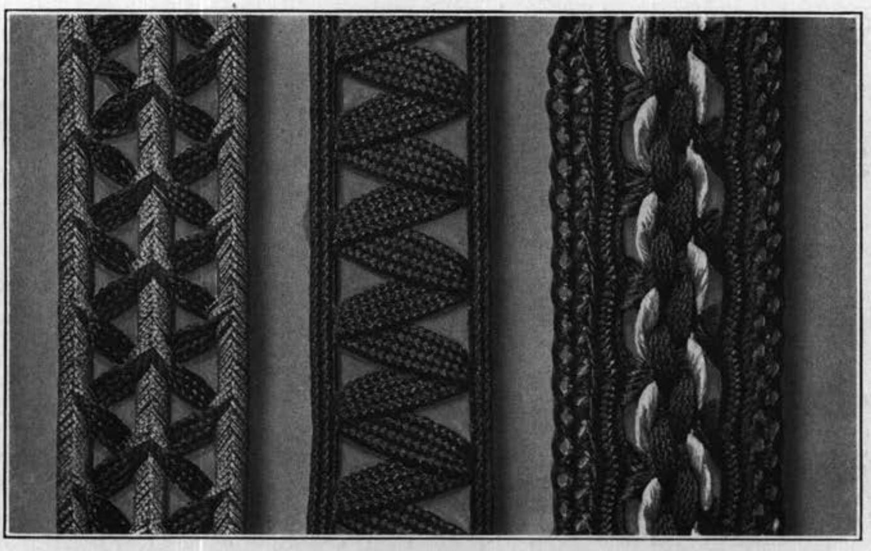


Fig. 47. Braids made on Stripe Braiders

Many fancy patterns of braid are produced on stripe braiders by using different kinds of materials, different colors of materials, uneven tension weights and odd setting of carriers. These machines are also very often fitted with loop attachments as well as other special attachments.

Figs. 46 and 47 illustrate a number of samples of braids made on stripe braiders.

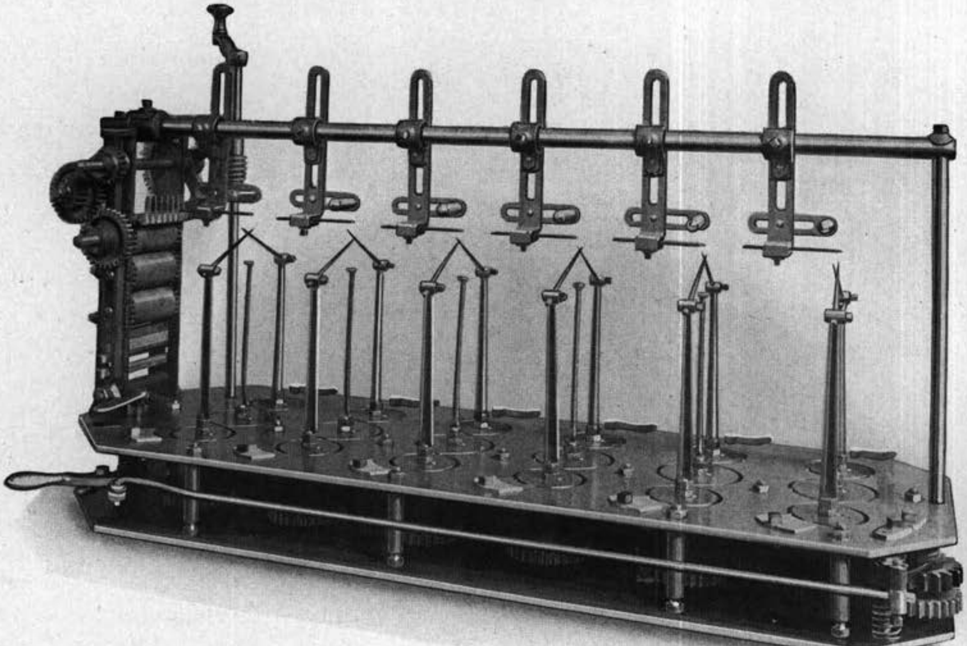


Fig. 49. President Braider

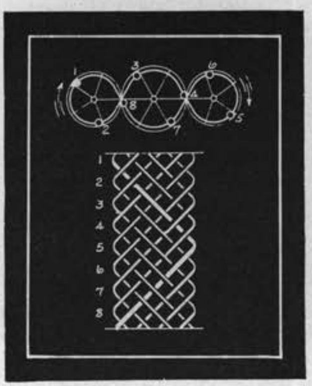


Fig. 48. President Braider

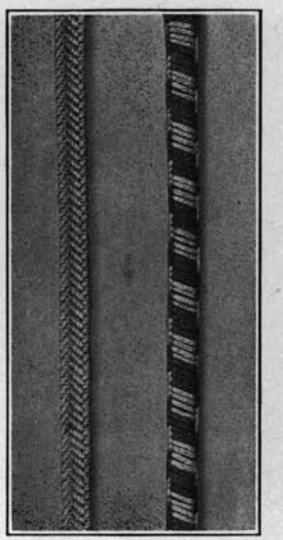


Fig. 50. Braids made on Fig. 49 Machine

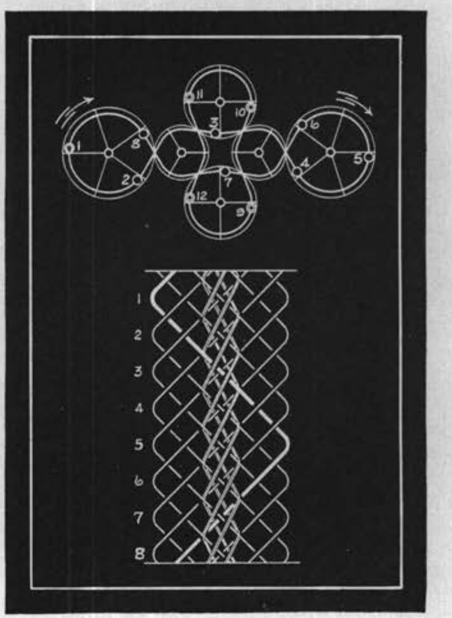


Fig. 51. Fancy President Braider

PRESIDENT BRAIDERS

Fig. 48 is a drawing of a President braider and the braid that would be produced by same.

Fig. 49 is an illustration of a President braider and Fig. 50 is an illustration of the product of a machine of this type.

By referring to Fig. 48 it will be noted that a President braider is built with three horn gears. This produces a braid which is similar to a soutache braid, with the exception that the President braid has three ribs instead of two as in a soutache braid.

Fig. 51 is a drawing of a fancy President braider and the braid that would be produced by same.

Fig. 52 is an illustration of a fancy President braider, and Fig. 53 is an illustration of the product of a machine of this type.

By referring to Fig. 51 it will be seen that the difference between a President and a fancy President braider is that the fancy President machine has a cross-run which the President braider does not have. This added cross-run makes it possible to produce a braid on a fancy President braider that has a centre rib of a different color from the side ribs.

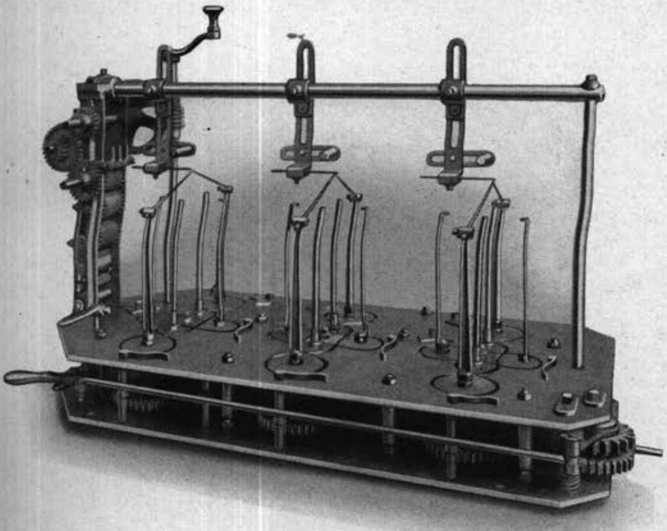


Fig. 52. Fancy President Braider

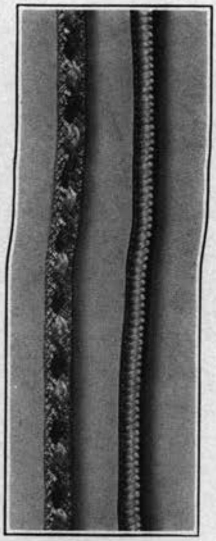


Fig. 53. Braids made on Fig. 52 Machine

SQUARE BRAIDERS

Fig. 54 is a drawing of an 8 carrier square braider and the braid that would be produced by same.

Fig. 55 is a drawing of a 16 carrier square braider and the braid that would be produced by same.

Fig. 56 is an illustration of a square braider and Fig. 57 is an illustration of the product of machines of this type.

By referring to Figs. 54 and 55, it will be noted that square braiders are built with two figure 8 runs or raceways and that the carriers are divided into two sets of 4, 6 and 8 each for the 8, 12 and 16 carrier machines of this type.

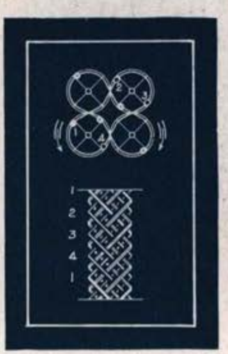


Fig. 54. 8 Carrier Square Braider

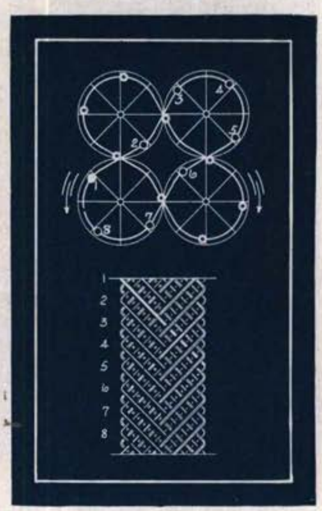


Fig. 55. 16 Carrier Square Braider

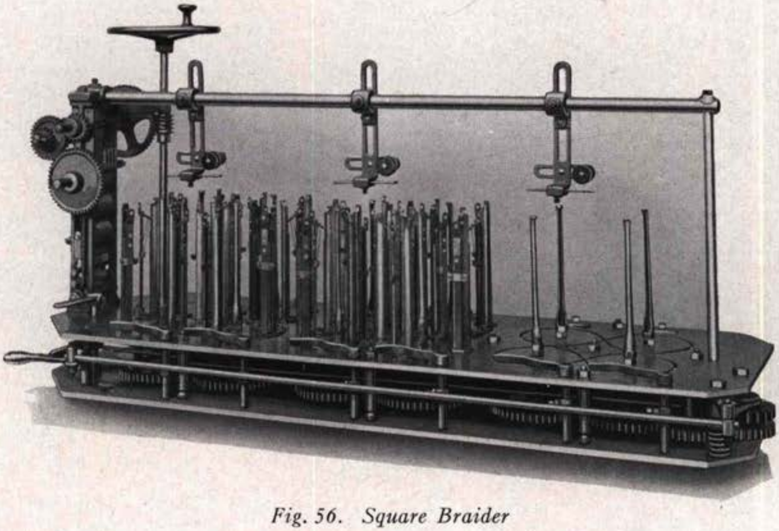


Fig. 56. Square Braider

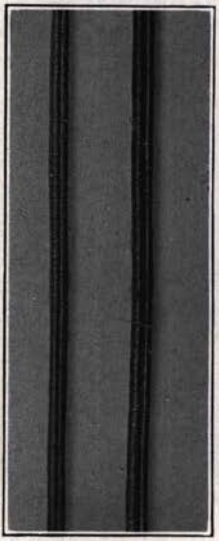


Fig. 57. Braids made on Square Braiders

CORD-EDGE BRAIDERS

The design of a cord-edge braider is such that the run or raceway is a combination of a flat and tubular machine. The product of a cord-edge braider is a flat braid with a tubular braid or cord on one edge.

Fig. 58 is an illustration of a cord-edge braider and Fig. 59 is an illustration of the product of machines of this type.

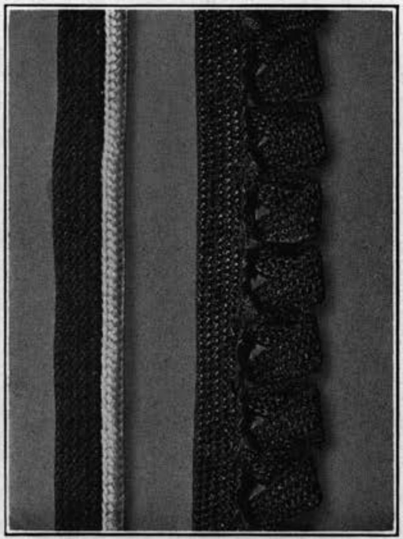


Fig. 59. Braids made on Cord-edge Braiders

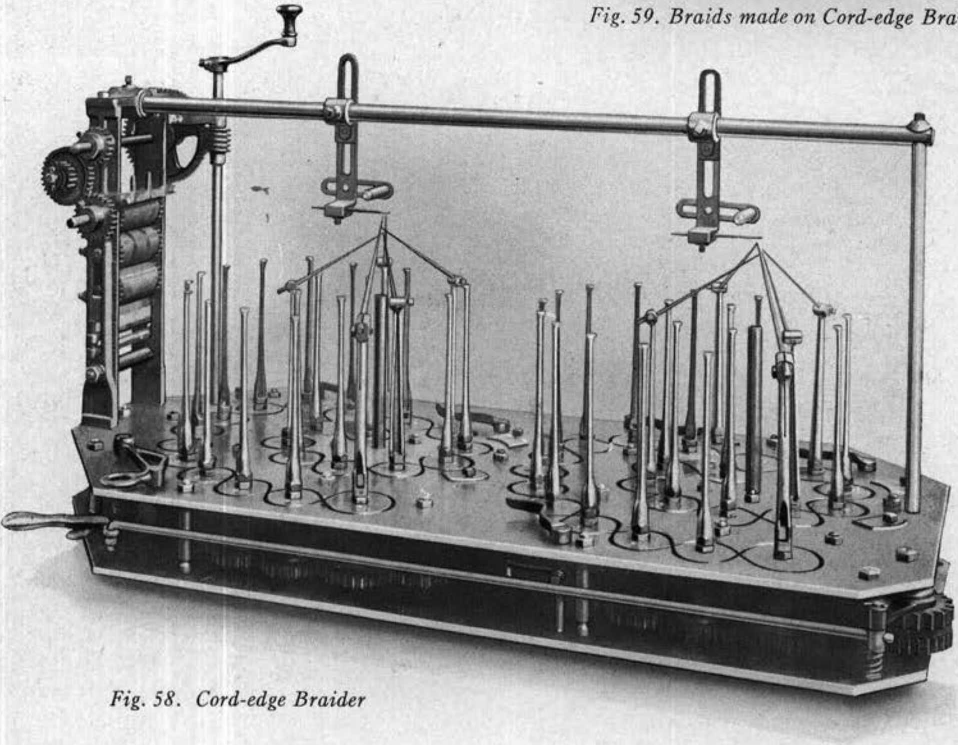


Fig. 58. Cord-edge Braider

CROSS-BINDING BRAIDERS

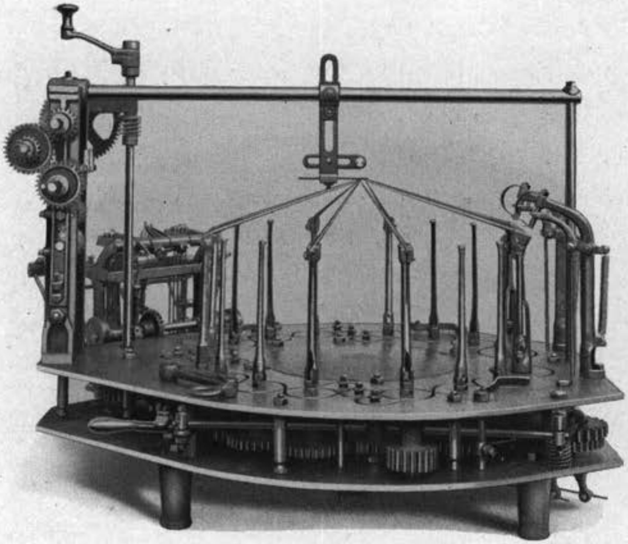


Fig. 60. Cross-binding Braider

Fig. 60 is an illustration of a cross-binding braider and Fig. 61 is an illustration of a few samples of braids made on these machines.

By referring to Fig. 60, it will be noted that the run or raceway of braiders of this type is divided into sections of 9 carriers each and the machines are usually built with 4, 5 or 6 sections—that is, with a total of 36, 45 or 54 carriers. The movement of the carriers is controlled by means of a jacquard, and the various patterns of braid made on these machines are produced not only by using different materials, different colors of materials, etc., but by movement of the carriers from one section to the run or raceway to another section, etc.

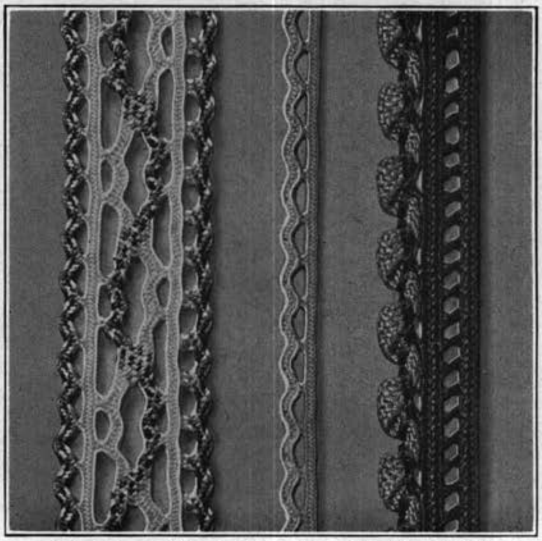


Fig. 61. Braids made on Cross-Binding Braiders

BI-CIRCLE BRAIDERS

Fig. 62 is an illustration of a bi-circle or "radium" braider, and Fig. 63 illustrates a number of samples of braids made on machines of this type.

Fig. 64 is an illustration of the run or raceway of a bi-circle braider. By referring to this illustration, it will be noted that this run or raceway is really a double run or raceway built together. The principal product of braiders of this type is fancy patterns of braid having designs of different kinds braided in same. These different patterns of braids are produced by moving the carriers from one run to the other and back again. This carrier movement is controlled by means of card jacquards which are clearly shown by Fig. 62. We will not try to describe the various features of braiders of this type in this booklet, as too much space would be required to do this.

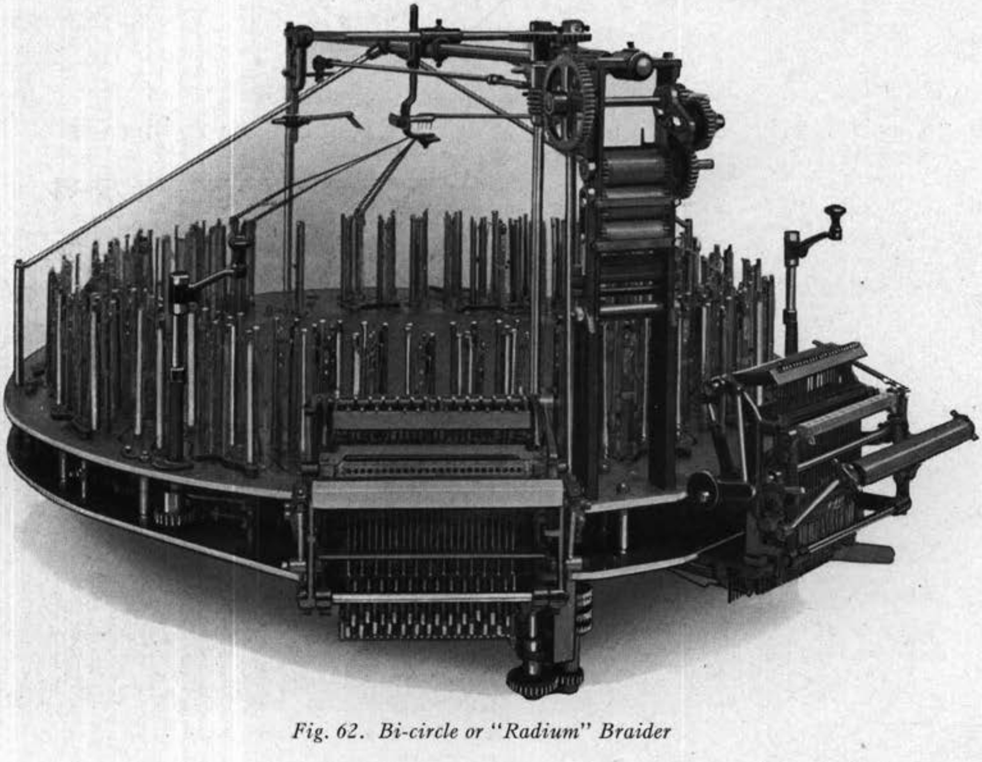


Fig. 62. Bi-circle or "Radium" Braider

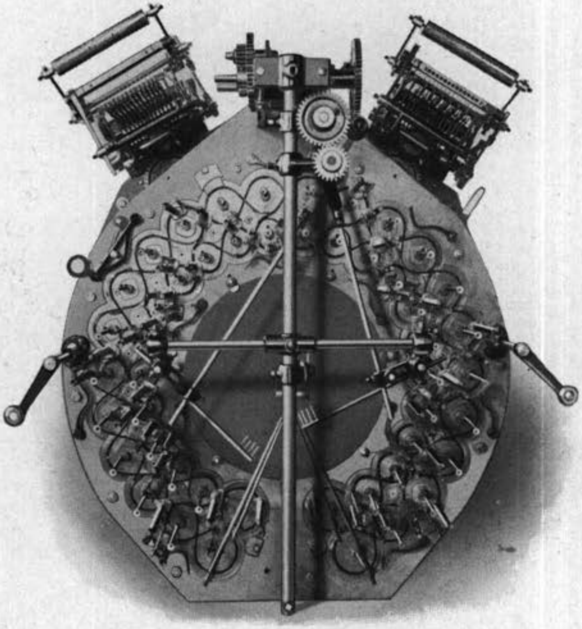


Fig. 64. Raceway of Bi-circle Braider

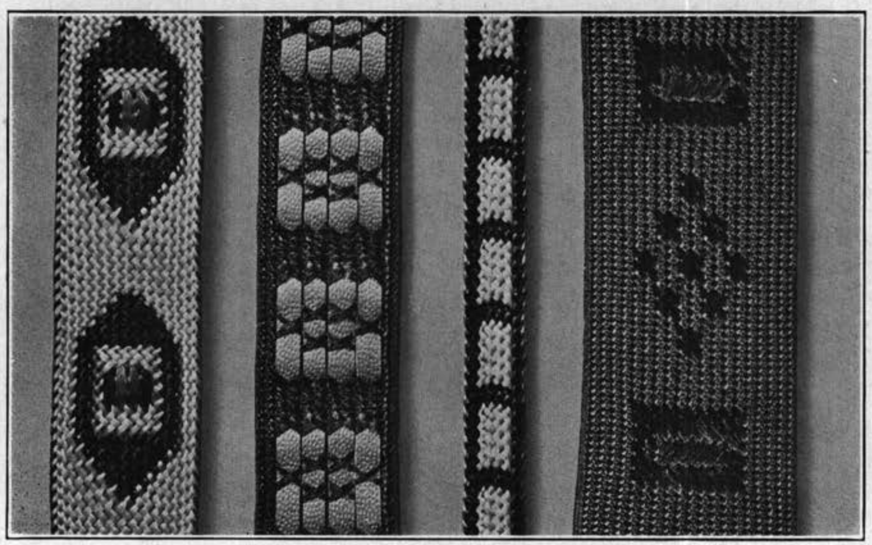


Fig. 63. Braids made on Bi-circle Braiders

CARRIERS

The carrier or spindle, which carries the bobbin on which the material being braided is wound, is one of the principal parts of a braider, and the successful operation of the machine itself depends to a great extent on the design and construction of the carrier.

The design of carriers is divided into two classes. One of these is what is commonly known as the "square pipe" or "inside weight" carrier and the other the "outside weight" carrier.

Fig. 65 illustrates a square pipe carrier while Fig. 66 illustrates an outside weight carrier. By referring to these illustrations, it will be noted that both these carriers are what are often called the "built-up steel" type of carrier. The principal difference in the design of these two types of carriers is that the square pipe carrier has the tension weight operating in the pipe of the carrier, while the outside weight carrier has the tension weight operating on the stem of the carrier.

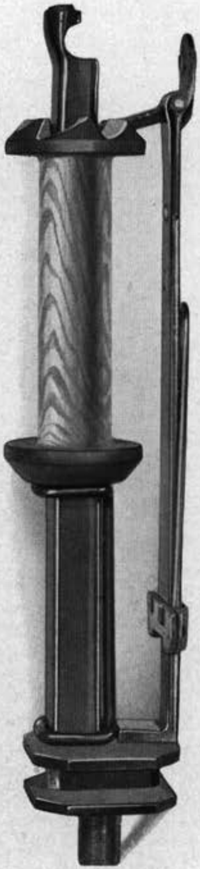


Fig. 65. Square Pipe Braider

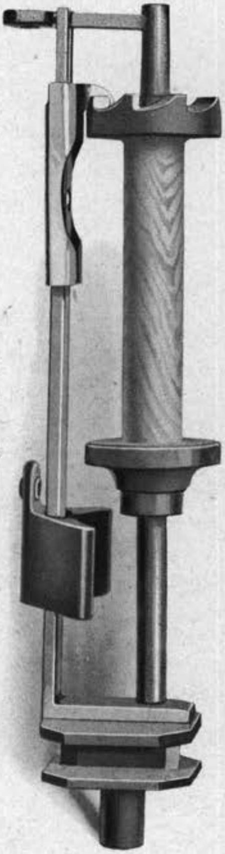


Fig. 66. Outside Weight Carrier

The square pipe carrier is the one most universally used because it has certain advantages not possessed by any other type of carrier. The principal advantage that this type of carrier has over all others is that the tension on the material being braided is always uniform. Another advantage possessed by this type of carrier is that light and so-called delicate colors of material can be braided without becoming soiled. The reason for this is that this is the only carrier which is so designed that the material being braided does not come in contact with any part of the carrier which is liable to carry oil.

It is very seldom that outside weight carriers are used on braiders for making either staple or fancy braids, because it has been definitely proven, both by exhaustive tests and many years of experience, that the square pipe type of carrier is far superior in every way to any other type of carrier.

DRIVING BENCHES

Fig. 67 illustrates a belt-driven driving bench and Fig. 68 illustrates a motor-driven driving bench.

Fig. 69 illustrates a motor-driven driving bench of braiders which clearly shows how bench-or gear-driven braiders are usually set up. As will be noted, the braiders are driven from the main shaft of the driving bench through sets of driving gears. One of these sets of driving gears, or "driving sets" as they are commonly called, is illustrated by Fig. 70. Each driving set drives two braiders placed on opposite sides of the driving bench

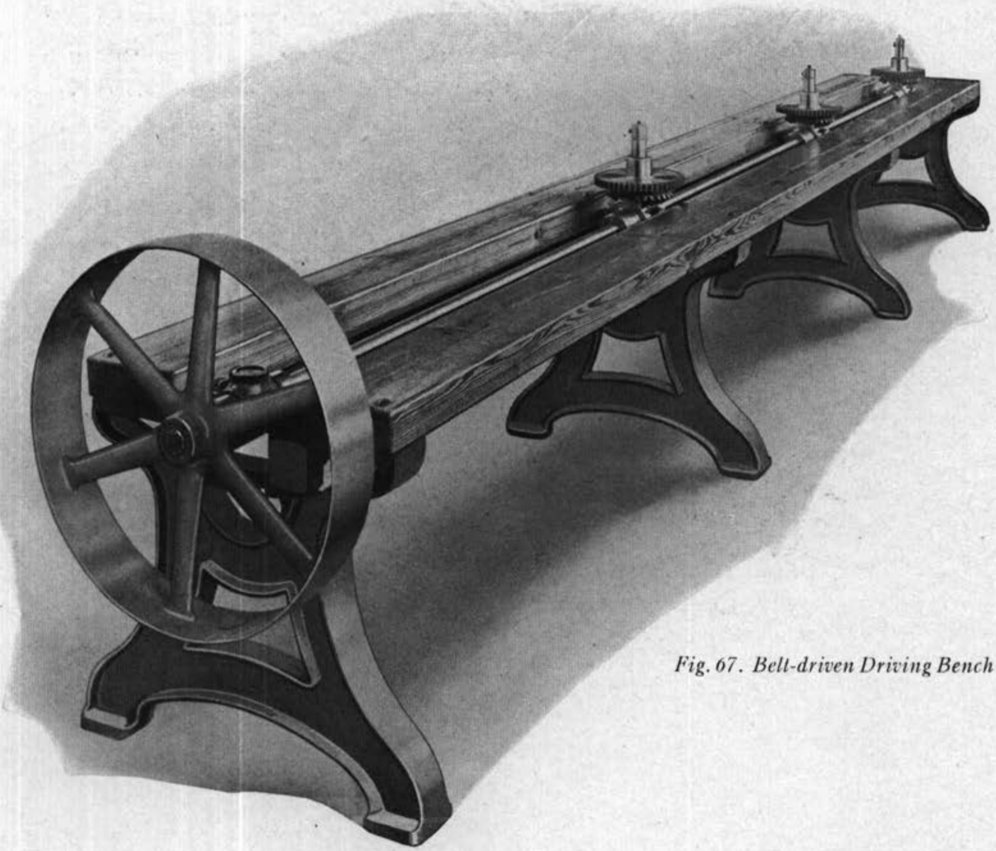


Fig. 67. Belt-driven Driving Bench

and the usual method of setting the machines up is to place two braiders of the same type and size on opposite sides of the driving bench. The speed of the two machines driven by the same driving set can be decreased or increased by changing the size of the spur gear on top of the driving set; the speed of an individual braider can be decreased or increased by changing the size of the clutch gear in the machine; and the speed of a whole bench of braiders can be decreased or increased by changing the speed of the main shaft of the driving bench. These various methods of changing the speed of individual braiders, two machines driven by one driving set, or a whole bench of braiders, makes a very flexible drive and one which will meet any condition which may be encountered as far as speed of machines is concerned.

Another and very important advantage of the bench drive of equipment is the saving in floor space which can be effected by the use of same, as it is possible to place a greater number of machines in a given floor space

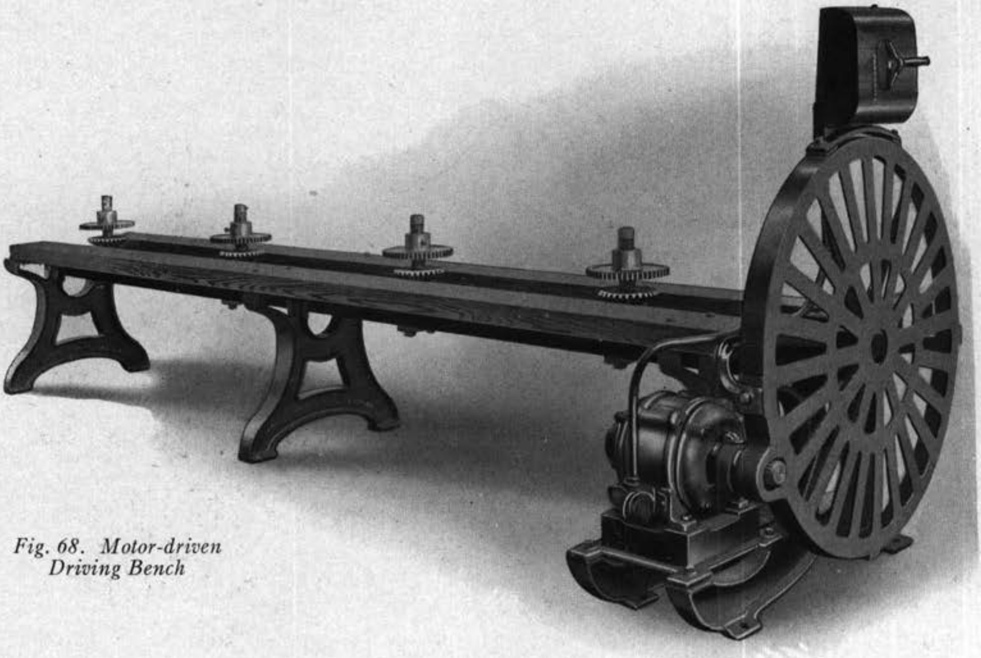


Fig. 68. Motor-driven Driving Bench

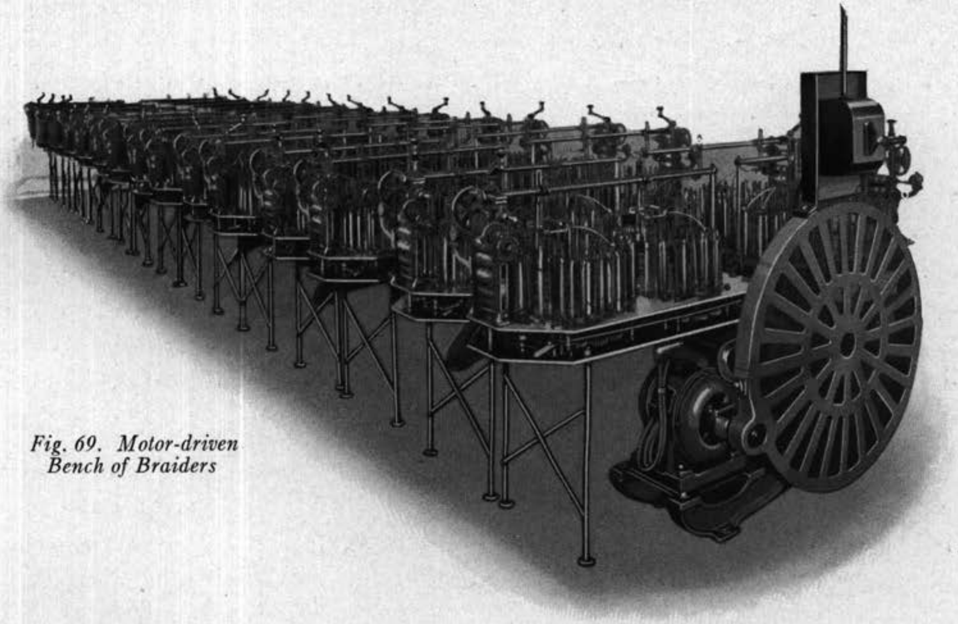


Fig. 69. Motor-driven Bench of Braiders

where this type of drive is used. This is the type of drive that is used for practically all installations of braiders, except where only a few machines of special types for special purposes are installed. For installations of this kind, machines built on long legs for individual belt drive are usually furnished.

Fig. 71 is a drawing of a floor plan of a bench of braiders of one type and size while Fig. 72 is a drawing of a floor plan of a bench of braiders of different types and sizes. These illustrations clearly show the most approved method of setting up gear- or bench-driven braiders.

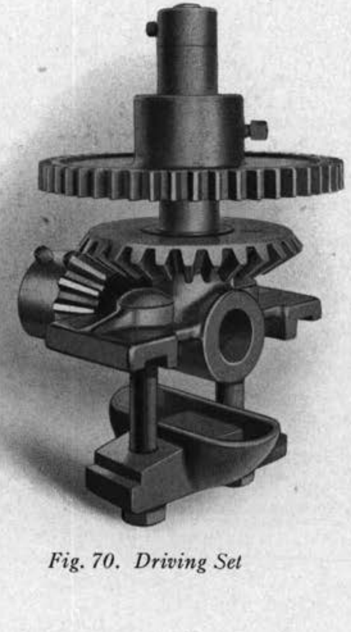


Fig. 70. Driving Set

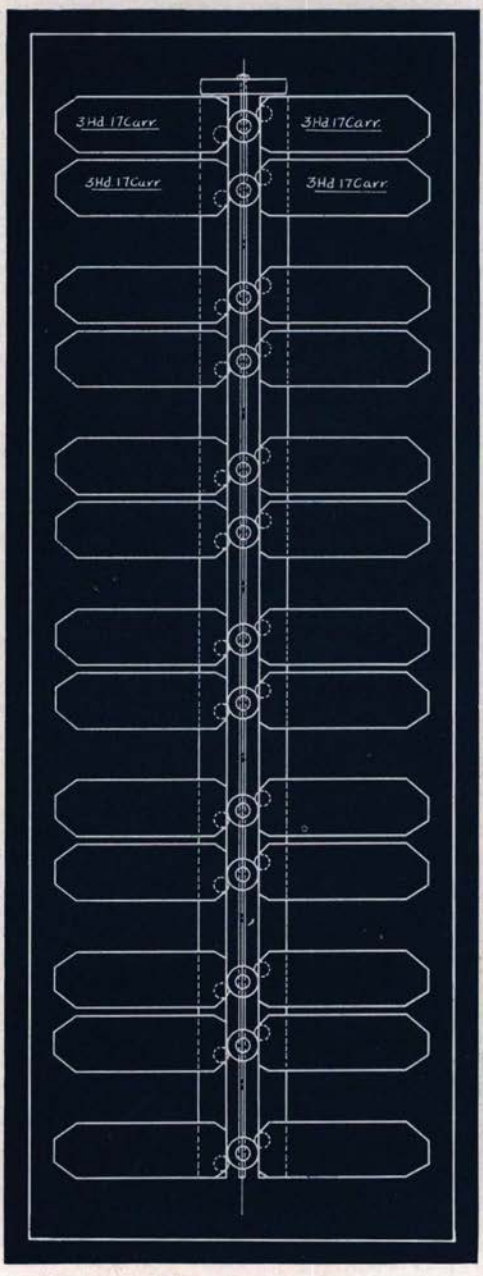


Fig. 71. Floor Plan of Bench for One Size Braiders

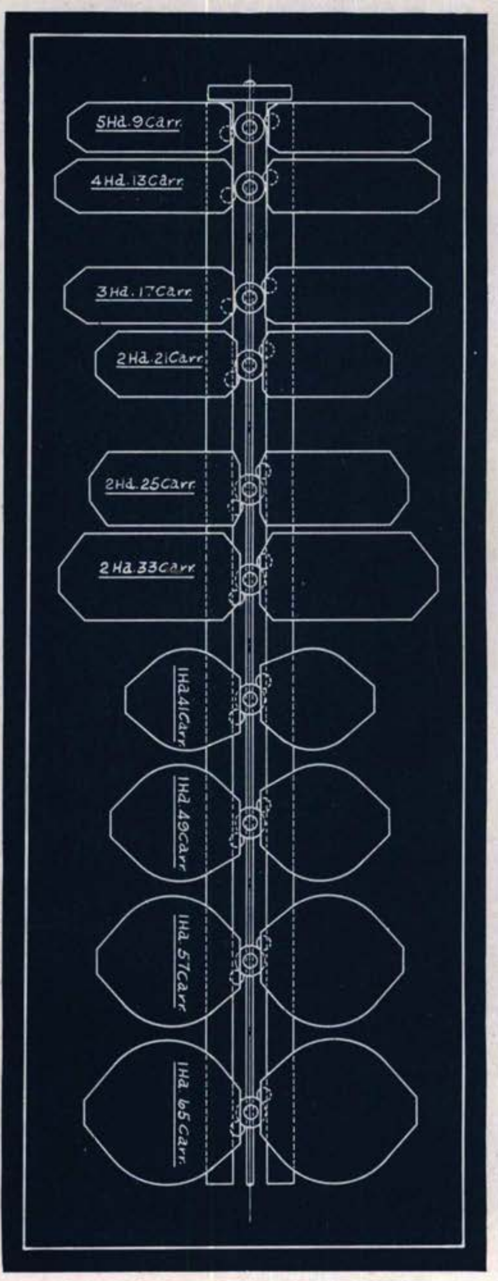


Fig. 72. Floor Plan of Bench for Different Size Braiders

WINDERS AND DOUBLERS

In order to produce perfect braids it is very necessary that properly wound bobbins be used. As some of the materials used for making braids are furnished in skeins, it becomes necessary to wind from the skein on to a braider bobbin, if single ends are being used; or to wind on to a winder spool and to double on to a braider bobbin, if multiple ends are being used. Fig. 73 illustrates a winder for winding from skeins on to braider bobbins or winder spools, while Fig. 74 illustrates a doubler for doubling from winder spools on to braider bobbins. Both the winder and the doubler are designed and built along similar lines. The winder is fitted with light-weight swifts to hold the material being wound, has an accurate traverse for guiding the material being wound on to the braider bobbin or winder spool, and has an automatic stop which stops the bobbin or winder spool when same becomes full. The doubler is fitted with a spool rack, which takes up to 6 winder

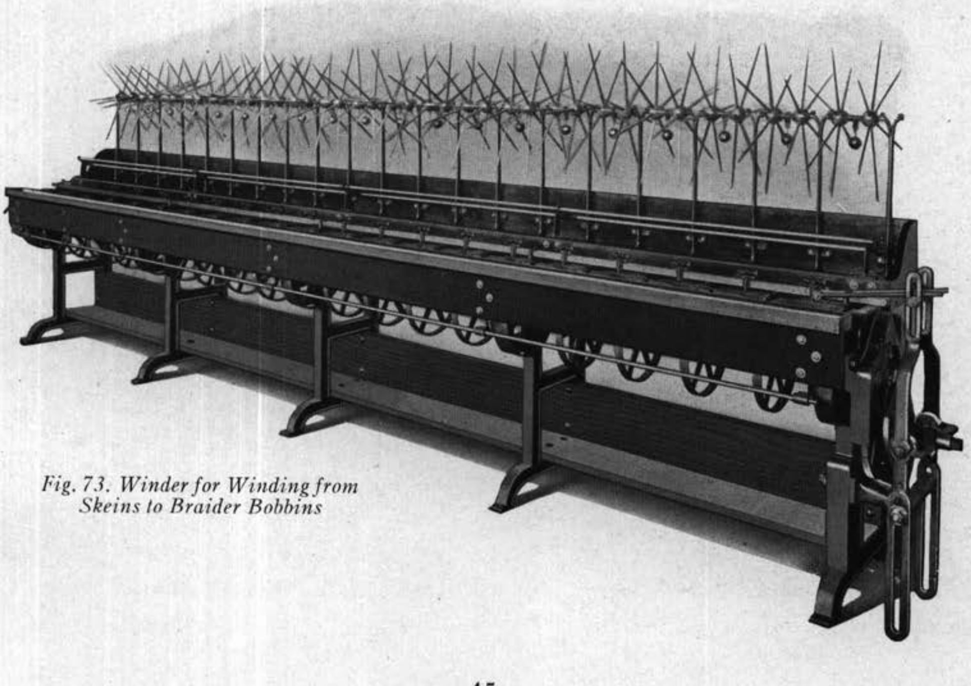


Fig. 73. Winder for Winding from Skeins to Braider Bobbins

spools for each spindle, has an automatic stop for each end being doubled, and has an automatic stop which stops the bobbin when same becomes full. The doubler also has two traverse rods which makes it possible to use the machine for doubling on to two lengths of traverse bobbins at the same time. The spool rack of the doubler is also fitted with brakes which provide an adjustable tension for the winder spools.

These winders and doublers are furnished for either belt or individual motor drive.

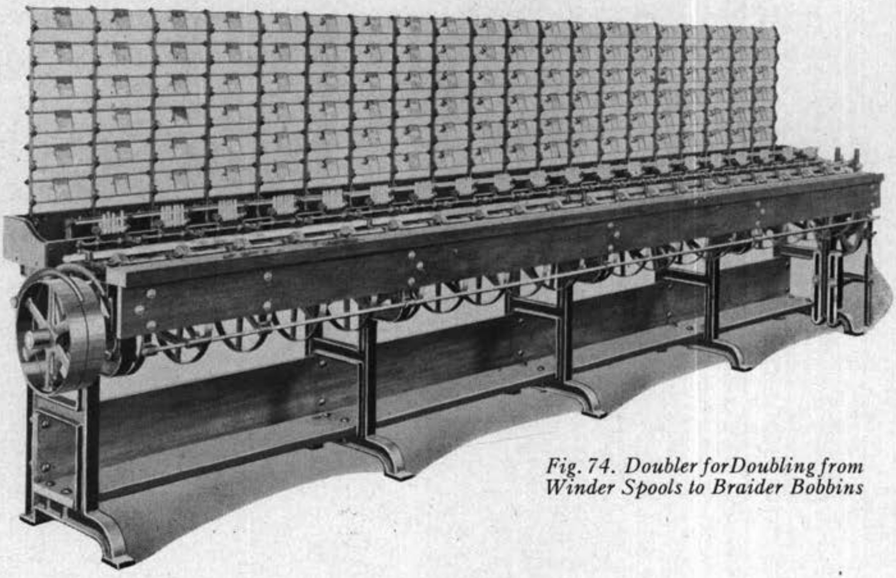


Fig. 74. Doubler for Doubling from Winder Spools to Braider Bobbins

CONCLUSION

In this booklet we have tried to illustrate and describe only such types of braiders as are most commonly used. We have built many other types, but, as these have been designed and built to solve special problems of braiding which are not of general interest, we have not made an attempt to include these. We will, however, be glad to go into any special braiding problems that any of our customers or prospective customers may have with a view of offering our wide experience in the art of braiding to help them solve their problems.

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